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PROGNOSTIC SIGNS
OF
ACUTE DISEASES:
EXPLAIN'D by the
BEST MODERN DISCOVERIES.
WITH SOME
OBSERVATIONS

Concerning Health, on Sudden Death, and the Nature of Chronical and Acute Diseases, on a Delirium and Frenzy. Of Prognostics from the Senses, from Pains, from the Pulses, from Urine, from Salivation, from Sweat, from the Appetite, from Tremors, &c.



L O N D O N:

Printed for GEORGE STRAHAN, at the Golden-Ball, against the Royal Exchange in Cornhill.

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THE PREFACE.

HIPPOCRATES could not more effectually recommend the studying of Prognosticks to Physicians, than by representing to them the Honour and Esteem, as well as the Benefit and Profit they might attain that way: for by the one he incites all ingenuous and generous Physicians, and by the last even Mercenaries, to that Study, the People justly taking Measures of a Physician's Knowledge by the Declarations he can make them about the Condition and State of their Sicknes. It behoves a Physician (in my Opinion) to foresee what may happen through the course of a Distemper. For the Physician who can FORESEE and FORETEL the PRESENT condition of the Sick, what HAS passed, and what is still to come, and lays open to their View those Observations they had OVERLOOKED, pro-

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cures to himself a Character of thoroughly understanding the state of the Sick, and they with great Alacrity put themselves under the Direction of such a Physician. The Physician is best able to conduct a Cure, who is most apprized of all the Accidents that are like to happen.

Every Age has assented to this infallible Truth; every candid Physician aspiring to this Esteem, by studying Prognosticks; every Impostor, by pretending to this divine Knowledge. It has been easy for the Crafty to delude the People, while Hippocrates, the School of Coos, and their virtuous Successors have found invincible Difficulties in perfecting this Work: For what consummate Experience, what incessant Labour in comparing it is wanting, to relate the Strength and Power of every Disease; to describe its Acuteness; to determine its Duration, and after what manner it will end at length, whether in Health, in another Disease, or in Death; to remark at what Age a Man is most liable to Distempers, what Season of the Year is naturally the most sickly, and what Countrey is most productive of Diseases. These has the great Hippocrates considered, and to greater Perfection than could well be expected from Experience alone: Yet so truly has
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he treated this Subject, that Celsus, Galen, Martinengus, Jodocus Lommius, Prosper Alpinus, and all other Authors and Commentators have then writ best, when they most closely followed this admirable Original.

In order to attain this Knowledge, Hippocrates has considered the Sick under every Circumstance of a Distemper: how he keeps in his Senses: how he changes in the manner of his Conversation: what Difference there is in his Speech: his Dreams are not neglected, no more than his different Looks: his Breathing, Pulse, his Food; his Longing, and his manner of Lying are duly weighed: the very Excrements of the Sick are examined; and out of all these many, excellent Observations have been collected.

But when we consider this Stock of Prognosticks, and how little we can apply them in particular Cases, we must confess that few of them inform us of the present Condition of the Sick; some of them would apprise us of future Events, but that none of them can acquaint us with what has passed: so that we are not sufficiently instructed by them and enabled to help the Sick, however useful they may be to save Physicians from an Imputation of having done them any Hurt.

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Experience alone is far from being sufficient to finish so divine and admirable a Structure: And therefore we must proceed farther than pure Observation can lead us, before we can reap those great and desirable Advantages we propose by foreseeing and foretelling the State of the Sick.

We may hope to carry this admirable Art to greater Perfection by considering the Prognosticks expected from a Physician, and the Means whereby they may be attained. The Prognostick required is the Expectation a Physician has of recovering the Sick; the Expectation again is drawn from the Nature of the Sick-ness, the Quantity and Intenseness of it, the natural Strength of the sick Person, and the Force of the Medicines; these two being the Powers whereby the sickness is to be conquered. And therefore this Knowledge of Prognosticks is not to be acquired by any other means, than by investigating the Diagnosticks of a Disease, whereby its Nature is brought to Light, and with it the Quantity of the Disease, the Strength of the Sick, and the different Powers of Medicines, as has been fully shewn on another Occasion. Giving then the Nature of any Disease and its Intenseness, together with the Constitution of the Person, we become apprized

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apprized of the present State of his Sickness, of what has preceded it, and what is like to follow through the course of the Distemper; which is truly Knowledge, and deservedly begets all the good Esteem, Confidence, and Trust, that a wise Man would put in any other Person.

*But before I give Examples of this Method, it will be necessary to explain a Passage in the middle of Hippocrates's Preface, so difficult that it has been omitted by some of the most learned Commentators of this excellent Author, as either they were not themselves sufficiently instructed in this Doctrine, or that it requir'd a Genius equal to his to find it out; at least the full Sense of it. The Words are, And lays open to their view (the Sick) those Observations they had over-looked. Galen, who thinks he better understood this Passage than any other Expositor or Commentator, very manifestly mistakes his Author; and his Exposition contradicts the Text, * alledging*

** Infirmi omittunt, non quæ*

nullo pacto agnoscunt; quemadmodum nonnulli interpretes incitè prodiderunt, sedes in profundo corporis perpeffas, autem Causas, & item affectiones earum: sed ex causis procatare'ticas nomine id est prægressas: ex accidentibus autem, quæ evidentia circa corpus sunt, ac sensibus usurpantur, verbi gratia, in Pulmonia maxilla rubicunda: nam quædam horum infirmi dicere refugiant.

that those Symptoms are not over-look'd, but conceal'd, by the sick person; and it must be confess'd, by considering the place, that he was not in the least surpriz'd of the design and meaning of Hippocrates; for there are Symptoms that do not make any great impression upon the Sick, that are notwithstanding absolutely necessary to be known, because without them even the Species of the Distemper cannot be determin'd; so that by what Method soever a Physician comes by those Symptoms, it is plain that he has thoroughly canvass'd the Relation of the sick person, when he is able to bring those hidden and unheeded Symptoms into his view, and very justly merits his highest Esteem on that account.

It is very difficult to shew this Art of Hippocrates, the most perfect Experience and compleat Observation being almost insufficient to this purpose; so that it is no wonder Hippocrates should not be understood when he recommended a Science, the Seeds whereof were not to be perceived in his Commentators: and if I may guess, it was in acute Diseases Hippocrates was best able to clear up the oversights of the Sick: For these Diseases kept a wonderful order and regularity in their returns at Coos, neither
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was their Appearance much diversified with a multitude of various Medicines administred for their Cure. And therefore we may fairly conclude that it was some of these that always carry'd their Stamp or Mark along with them, and it was the searching after and finding this pathognomonick Symptom that gave this Discovery to Hippocrates. This may be more readily believ'd, that this Art is recommended in the Preface to this Doctrine of Fore-knowing the future Events of acute Diseases.

It would not be difficult to illustrate every particular of this Preface of Hippocrates with Examples, if I were not under the Misfortune of being often constrained to have recourse to my own Books of a Diarrhœa and of a Gonorrhœa, the Nature of few or no Diseases being yet made known besides these in the mentioned Books. For it is from the Nature of a Disease we learn how it is formed h. e. every thing that has preceded the Disease: So that we are thus apprized of the present State of a Disease, and of that which is already pass'd; and from both these together with the Constitution of the person, we fore-know and fore-tel whatever is to follow in the Course of the Disease. Many Examples and
Instances

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Instances of this kind may be found in the 79th page of the Book of a Diarrhæa, and most of the Corollaries in the Book of a Gonorrhæa are so many Prognosticks of its being easily or difficultly cured, the Consequence of its continuing, &c. and the fourth and fifth Chapters give the Nature of that Disease.

This manner of explaining Diseases, abstractly and without regard to Practice, the Author of this Book has observed; and that from the modern Discoveries in the Animal Oeconomy, and about the Doctrine of Diseases; in which attempt he has better succeeded than most other Authors, who did not prosecute this Subject in such a manner, nor founded their Prognosticks upon any principles of Knowledge, but upon general Observations.

*But to proceed; when the various Medicines administred in the Cure of Diseases enter the Combination, the foreseeing future Events, and declaring what has already happen'd, are equally difficult; which difficulty not only arises from the great variety of Cases in such a Combination, but from the small knowledge Physicians have of the Natures
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and Powers of Medicines. On the other Hand, the direct Actions of Medicines being known, together with the Nature and Quality of a Disease, it is easy to determine what has already happen'd, and what is like to happen thro' the remaining Course of it. Examples of this last Case may be found in the mentioned Books; and therefore in any period of a Disease the present Condition of the sick person being given, we may discover the kinds of Medicines that have hitherto been administred for the Cure of that Disease, and what the Event will be under such an Administration. And therefore we may justly conclude with Hippocrates, that the Physician is best able to conduct a Cure, who is most apprized of all the Accidents that are like to happen.

All these things being consider'd, it is very manifest, why we have no good, or very few, Observations in Physick. It is indeed very easy for a Physician to relate what he takes to be a Disease, and with what Medicines he cured it; this appear'd to be so very easy, that every Man whose Ambition led him to be an Author, has thought himself qualify'd to give his Histories of Cases to the World. But Experience, as well as this Account

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Account of these Matters, may fully convince us of the difficulty of giving such particular, and circumstantial Observations, as can help us either in finding the Nature and Quantity of a Disease, or the proper Times and Medicines for our Administrations.

By this kind of Knowledge we find the particular Flaw or Defect in any History or Observation; for if the Disease is not duly described, all farther Inquiry is needless: if the Method of Investigation is unnatural, we can discover nothing from the best Description; but Inconsistencies and Contradictions fill the whole Account. Let us, on this occasion, consider a particular, in the Small-pox, of bloody Urine, related by an eminent Physician, in his Letter to the learned Dr. Freind. These are his Words: Hoc tamen funestum fati impendentis prænuntium (camphorâ bis in die exhibitâ, at acidis larga manu propinatis) amovi, ægroque brevi morituro ad tempus succurri: sed, ut vera fatear, ne unum quidem variolis affectum, cui urina cruenta fluxerit; diem decimum sextum ab eruptione supervixisse notavi.

This Symptom of bloody Water gives the Intenseness of the Small-pox, and both of them shew what kind of Medicines are useful in the Small-pox with this Symptom,

Symptom, which are altogether of another Nature than those proposed by this Physician; and therefore we may conclude that he never removed the bloody Water with these Medicines for the least space of time. This is farther evident; for when this bloody Water is once removed, there is no farther Danger on that Score, and the Small-pox must afterwards proceed without any Difficulty on that account; and that because the Quantity or Intenseness of the Matter of the Small-pox, and the bloody Urine is the same, and must therefore be equally removed: but this has not yet fallen under the Notions of this Physician.

He confesses indeed, that he never yet saw one in that Condition live till the sixteenth Day; but when he is pleased to make a second Confession, we may hear that none lived half that time. On the other hand, if the Small-pox were a little better known, and the real Cause of an Hemorrhage, it is far from being impossible to cure the bloody-water, and save the Life of the Sick under that Circumstance. And therefore as this Symptom is declared incurable, and persons troubled with it are now supposed not to admit of any Remedy, I hope it will be no disagreeable Digression, to give one History of many

ny more that happen'd successively when this Symptom was removed, and the deplorable persons perfectly recovered their Health.

Mr. Pits, a Son of the Honourable George Pits, Esq; was taken ill of the Small-pox. The second Day after the Eruption he passed a great Quantity of Blood with his Water; which increased abundantly upon him, so that far the greatest part was Blood. Things growing worse and worse, I met the late Sir Samuel Garth, who was their Physician: In eight Hours the Blood sensibly abated, and was altogether removed within the twenty four Hours. These Small-pox ended successfully without any great Trouble to the end of the Cure.

The Method is drawn from the Nature of the Small-pox and of an Hemorrhage, as I lately said, and was executed with Success in this and several other Cases with very common Medicines: and therefore however deplorable bloody Urine in the Small-pox has been hitherto justly deemed, yet we now see it has admitted of a Remedy.

Many other Advantages arise from this Doctrine, from which we find the Certainty of Prognosticks flows; and it is very manifest, that Physicians well deserve

serve all the Honour and Esteem Men can bestow, who can foresee and foretel whatever has passed, is present, and is to happen in the Course of a Disease.

Notwithstanding of the Reasonableness and Excellency of this Doctrine, yet some harden'd in their Ignorance depreciate every thing that falls not within their Capacity, and not only despise this Knowledge as vain and impossible, but even reproach the best Set of Physicians as Diviners, and Fortune-tellers, for doing Justice to their own Profession and to Mankind. But as they are truly barefac'd Enemies to both, they have already enough to do to support their pretence, and on that account want no farther Confutation.

There are others, sensible of their being incapable of attaining to this Knowledge recommended by Hippocrates, pretend to it because of the Esteem and Profit they expect thereby, and often foretel without having foreseen. One of these never portend any thing but Danger and Desponding, Misfortunes being so very common to them, that a contrary Event should not in common Reason secure their Reputation, because they foretold without Foreknowledge.

Another of those, who follow for the Loaves, secure themselves by a double Prognostick;

Prognostick ; one with the Sick, and another in the World ; and it's out of this Insurance-Office come all the double Accounts we have of those Artists Prognosticks, at the Decease of a Person of Note, whose manner of dying is more narrowly inquired into. But as it is not my purpose to expose the Abuses committed by the Pretenders to Prognosticks, but to forward and encourage the true Knowledge of foreseeing and foretelling the Event and every Circumstance of a Disease, I willingly leave this Subject ; Galen assuring me, that Mali hi Medici satis ad male agendum exercitavi & sapientes sunt.

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TH O' it be certain, that the Recovery of the Sick is the great Design of the *Medical Art*, and undoubtedly more necessary than to *pre-sage* the *Event* of their Distempers; yet 'tis no less certain, that when the *Prognostick* Part of Medicine is managed with due Circumspection; Caution and Prudence, besides, that it acquires no small Esteem and Authority to the *Physician*, and vindicates the Profession from the Reproaches and Contempt that's thrown upon it; nothing is more conducive to incline and dispose the *Patient*, with some Confidence and Assurance, to observe the Advices of such, who not only can reason upon the Nature of his Distemper, account for its Causes, and tell him what happen'd before the Invasion of his Illness, but likewise what may be the *Issue* and *Event* of it. Whereas
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the *Predictions* that are doubtful, wavering and uncertain, not only render the Patient hopeless, but the Physician also suspected of Ignorance, especially, when nothing is more reasonably expected, than that he should prevent a dangerous imminent Symptom discover'd afar off, and by his Art hasten a good one long'd for.

Thus it was, that the Great *Hippocrates* acquir'd that just Esteem, which always will be due to his Merit. For, having with the greatest Diligence and Industry observ'd the most minute Circumstances of Diseases, he could not only distinguish the one from t'other by the Signs that properly belong'd to each; but by comparing the same sort of Distemper which happen'd to several Persons, and the Accidents which usually appeared before and after, he could foretel a Disease before it came, and give a right Judgment concerning the *Issue* and *Event* of it.

Now, the Nature of most Diseases being the same as in former Ages, and their Periods observing the same Order as formerly, the Observations made concerning them, as they are perpetual, so likewise the more certain. And forasmuch

as the Concern we have for our Bodies in the Disorders of Sickneſs, makes us ſollicitous to know what will become of them, and no leſs careful to apply to thoſe who make it their Profeſſion to know the Fabrick and Conſtitution of a Human Body, and the Changes and Alterations that happen to it, for their Advice and Sentiments concerning *Ours*.

I purpoſed therefore, at firſt indeed, for private Uſe and Satisfaction, to inquire into the Advances that have been made in the *Prognostick* part of *Medicine*, not only from the excellent Obſervations of the Divine *Hippocrates*, every where to be found in his Writings, but more particularly collected in his Book of *Aphoriſms*, *Predictions*, and *Obſervations*, which were kept in the School of *Coos*, but alſo from thoſe latter ones of more modern Authors, which indeed are deſcribed with all imaginable accurateness; every one having trod the old Path, and probably upon the Authority of that Great Man; but (as if *Empyriſm* ſhould always prevail) without any further Inquiry, or giving us the true *Reasons* of thoſe remarkable *Phænomena* upon which the *Prognostick* part of *Medicine* ought to be founded.

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The Respect that's due to the Memory of the Antients, will not permit us to imagine, that this unaccountable Laziness could proceed from a Belief, that Medicine was a consummated Art, and brought to due Perfection, and that they were only to enjoy the advantages of that Light which they had from those that went before them. But, they may be more justly charged with neglecting to inquire into the *Reasons* of that vast number of Observations, which seem to have been taken upon meer Authority, tho' many of them be founded only upon particular Cases, and set off with amusing and unintelligible Terms, without any regard to the unalterable Laws of *Motion* and *Mechanism*. And tho' it be true, that 'tis peculiar to *Medicine* to be vastly extensive, and that one Man's Life seems to be too short to arrive to any tolerable Perfection in it; yet much of this may be justly ascribed to an undue treatment of it, or sitting down upon those bare Observations, which others have made, without ever satisfying our *Reason* concerning them. For,

How conducive soever towards the improvement of Medicine, Observations may be, yet they must be much more so, when

when founded upon *solid Reasoning*, which, tho' it be the Measure and Standard of all our Actions, and the *Base* of Arts and Sciences, has nevertheless been least of all regarded in this. Hence are the small Advances that formerly have been made in *Physick*, which, probably, had been brought to greater Perfection than now it is, had it been treated as it ought to have been, and considered in its own Essence, and rather as a Science than an Art; seeing its *Object*, namely, *Human Body*, as 'tis one of the most surprising Pieces of *Mechanism*, so are its Distempers owing to a Vitiating of the Quantity, Quality, and irregular Motion of its Fluids, to a bad Disposition and Texture of their Channels, and of the other solid Parts. Now, all these being only Modifications of material Beings, and having the Dimensions of Bodies, must undoubtedly be examined by the Effects and Causes of those Qualities, and as far as they are accountable by the known *Laws* of *Mechanism*.

But, as if this last had been reserv'd to atone for the Laziness and Ignorance of former Ages, more Discoveries have been made, and greater Light of late has been brought into the dark Regions of *Physick*, than for some thousands of Years past,

past, which is justly owing to the Industry of those brighter Minds, who to make the greatest Removes from *Empyricism* that could be, have taught us to *reason* clearly and intelligibly upon natural *Appearances*, instead of amusing our selves with precarious Hypotheses and Conjectures.

But, this matter being already discours'd
Dr. Cheyne. on by the Learned Author * of the *New Theory of Fevers*, I shall only add, that in reflecting upon the present State of the *Medical Art*, as I'm convinc'd, the most Ingenious of the Age, who are engag'd in the Profession, will acknowledge the great Improvements the Great *Borelli*, *Bellini*, *Pitcairne*, and some others have made in it, so neither can I, in the treatment of this Subject, wherever occasion has offered, forbear to discover my Ambition in following after that *Light* which those Great Men have enriched the Art with. And as to the Reader's Censure, to abate it in some measure, I think it not improper to acquaint him, that I had rather own all I may be charg'd with in the management of the following Discourse, than trouble my self more about it; and therefore shall neither bespeak his Indulgence nor favourable Construction.

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PRÆSAGIUM MEDICUM.

Introduction.

Could our Bodies always persist in their Natural State without any Alteration, and every part whereof they are compos'd, exert its Office; we should enjoy a perpetual course of *Health*, in a State and Condition always desirable. For every one that values Health, and knows how nice and brittle the *Make* and Fabrick of his Body is, and how soon disordered, Wards off, as long as he can, the Diseases that assail him; because, every Inclination and Disorder, threatens Dissolution and *Death*, which is the greatest Dis-
ease.

But no body enjoys *perfect Health*, and they only are said to be soundest, who are less pained than others or themselves use to be; For besides, that, every part of Humane Body consists of Principles which naturally tend to dissolution, the Impressions that are continually made upon it from
B without

without and within, must more or less interrupt the Course of that we call *Health*; not to mention, that, some even in a *Physical* Sense, are in a dying State, as soon or before they come from the Womb; their indisposition being owing to their Primary Conformation, which can never be repaired.

But, tho we should enjoy a tolerable State of *Health*, for some time, yet, by the repeated Functions of Life, the Springs that move our Bodies, at last come to be weakened and unbended; and the Distempers that follow thereupon continue while we Live. Again, some die before they are Sick, that is, affected with any apparent Distemper or Sense of Pain. Thus we fall a Victim to *Suffocations*, *Appoplexies*, *Polypus's*, *Drop-sies*, Ruptures of latent *Apoftems*, and such like Distempers. A sudden Perturbation, Obstruction and Confusion of Spirits in an Instant extinguisheth the vital Flame. And when the great Spring, the *Circulating Blood* and vital Stream, for which so exquisite Pipes are made to distribute it to all the Parts, and return it back again to its first Source, for reiterated Motions and Functions ceases to move, (which upon many Occasions, and seemingly slight Disorders it frequently doth) Life ends.

But such Diseases as are owing to an Impotency of Nature, a Defect in the Instruments of Concoction and Organs of Secretion, Indigestion, Congestion or disturb'd Motion of Humours, come not to their Period
so

so soon; And tho at Last they come to be fatal, yet, their Symptoms are so obvious, and they give such Evidences of their Nature, that, 'tis almost Impossible to mistake them, or not know what they portend. Whereas, those Distempers which are chiefly seated in the Fluids, and therefore *acute* and short, by reason of their quick and violent motion, occasioned sometimes by external Causes, and sometimes proceeding from this or that peculiar Inflammation of the Blood; irregularity and *Intemperies* of particular Bodies, run speedily through their Period; and are so nice and unmanagable, that, sometimes they seem to baffle *Experience* it self, and the very Principles of the *Prognostick Art*. Having therefore propos'd to my self an enquiry into the State of our Bodies in the last mention'd Distempers, what's portended by their *Symptoms*, and if the Machine can be repaired and put in order for some time (for it cannot last long in Comparison with more solid Bodies) or, if the disorder rises so high, that it cannot be surmounted but must needs come to a dissolution; It may not be unfit in the first place, to enquire what's portended and presag'd by the frightful Symptom and Appearance of a *Delirium* or *Raving*.

C H A P. I.

Of a Delirium and Frenzie.

IF we can't account for the Union of the Mind and Body, nor reach it with the Eye of our Reason; yet, the mutual *Sympathy* that's between them, is very obvious: For, while the Blood and Spirits run briskly in their Channels, the Mind is pleas'd and joyful; But when they are slow and dull or obstructed in their Motions, we are sad and pensive; and upon the least indisposition of the Body, our Mind is put into Disorder and Perturbation: And when the indisposition is great, and the *Craſis* of the Blood considerably altered, the Texture and Cohesion of its parts dissolv'd, when the Globules of it are broken, and the Nervous Liquor runs confus'dly and at random into the *common Sensory*: a Thousand different *Species* must be represented to the Mind, without order and Coherence, exciting it to all those appearances and irregularities, which we see in those that are *Delirious*.

The ways by which the Mind may be brought into this perturbation, are as many and various as those by which an Indisposition may be induc'd upon the Blood; and their Effects are more or less dangerous, and of longer and shorter Continuance according to their

their productive Cauſes. Thus, the *Delirious* Motions of the Mind, that are owing to immoderate Drinking, Anger, want of Sleep, and the like, are taken off, and become more regular, when the Blood hath thrown out the Heterogeneous Particles of the hot Liquors, and recovered its wonted Circulation. Thoſe that are cauſed by Stroaks, Wounds and Contuſions of the Head, continue longer and are more dangerous; chiefly, becauſe the Veſſels of the Brain are cut and Diſordered, or a Fermentation raiſed in the Blood. Again the *Delirium* or Frenzy of Lunatics, tho' it laſt ſome Months or Years, and ſometimes all their Life, is yet leſs dangerous; either becauſe their Blood is ſo much fixt, that it cannot riſe to a Fermentation, or ſo fluid, that it cannot be obſtructed in the ſmaller Veſſels. But the *Delirium* and *Frenzie* that's here conſider'd, as one of the Symptoms of continual Fevers, is different from all thoſe, not only with reſpect to its Productive Cauſe, but alſo to its dangerous Effects.

Whatever be the primary or productive Cauſe of Feveriſh Diſtempers, 'tis plain that at the firſt Invaſion of thoſe that are acute and continued, the active Liquor of the Nerves ſeems to be fix'd, ſhut up, and hudled together, and the Blood in the Veins to be depriv'd of its circulating Motion: For, the extreme parts are cold, the Pulse weak, and the Reſpiration quick, the Patient is in a languiſhing and fainting State; and as ſome have obſerv'd, there is a coldneſs in the Blood taken from his Veins. But this Scene ends

in a little time when the Blood and Spirits recover their force and Motion, and come to be more univerſally diffus'd : The Cold and ſhivering is chang'd into Heat, the Pulse is ſtrong, brandiſhing and quick, the Arteries and Veins are ſwelled and embouldned, and the Quantity of the Blood augmented, that is, its parts are rarified, according to the Degrees of its Velocity.

The Blood being thus augmented, muſt diſtend its Channels and preſs upon their Membranes, and the Veſſels that are adjacent to them, eſpecially thoſe of the Head, where they are moſt implicated and twiſted. Hence are the exquisite Pains, Stagnation of the Liquids, and other Diſorders of the Brain. And when the unuſual velocity and heat of the Blood hath continued a conſiderable time, its *Serum* muſt be exhausted, and its parts rendred more Viſcous and fix'd, becauſe a preſſion upon the ſmaller Arteries and adjacent Veſſels, muſt ſtrain out the more Liquid and *Serous* part, or whatever is moſt fluxible, and thereupon that which remains, muſt be the leſs diſpos'd for Motion. So that whether we conſider the Blood as augmented in the Arteries, (as it muſt be when it is not emptied into the Veins,) or otherways vitiated by a long continued Heat, its Channels muſt be diſtended, and the Nerves and Fibres, eſpecially thoſe of the Brain contracted, and thereupon an irregular Motion produced in the Animal Spirits, which, not obſerving any certain and determin'd Order and Coherence, muſt repreſent thoſe va-

rious

rious *Species* to the Brain, by which the Mind is excited to a *Delirium*, or *Raving*, and at last to that of a *Frenzy*; if it be not taken off by Nature or the interposition of Art.

To see the disorder of the Mind in this State, will readily convince us, that it must be the Product of that of the Body, an Alteration of the whole Frame and Constitution, an intense heat, augmentation or obstruction of the Blood in its Circuit, a Medley of the Liquids and Confusion of the Spirits, a Stagnation of the Blood and Humours in some parts, and a dissolution of it in others, some parts cold and benum'd, and others hot and inflam'd, in some parts a relaxation and flagginess, and in others a *Tension* of the Nerves. In one Word, every thing that tends to the disjoynting of the Machine, and putting an end to its Fabrick and Motion.

Now, it comes to be considered, what may be the Event and Result of this frightful Symptom; and what are the justest *Prognosticks* that can be made, with respect to the Death or Recovery of one in this State.

That the irregular Motions of the Nervous Liquid, immoderate watching or waking, the exquisite Pains of the Head, *Delirium* and *Frenzy*, must continue, till the heat and quantity of the Blood, stagnated and collected in the Capillary Arteries of the Brain, be taken off and diminished, is very plain; and it is likewise certain, that nothing is more conducive to this purpose,

than *Spontaneous Sleep*, and all sorts of *Evacuations*.

(a) Aph.
50. § 4.

As to the first of these, 'tis commonly thought to be a good Sign, and gives fair Promises of Recovery, when a *Delirious Person* after long *watching* falls into a *Spontaneous Sleep*; But how uncertain the Result of it may be, is gathered from *Hippocrates* (a) and for the better understanding of this *Aph.* and the *Sleep* of those that are *Delirious*, we are to observe, that there are always some Intermissions and Exasperations, in this as well as other feverish Distempers, chiefly, because the heat and fervency of the Blood, is not always the same, or equal to it self; being sometimes greater and sometimes lesser, according to the fluidity and viscosity of its parts, and velocity of its Motion. Now, 'tis plain, that when the heat of the Blood is greatest, and its parts rarified or stagnated in the Arteries of the Brain; there must be likewise a Distention or Contraction of the Nerves and Fibres of those parts; and as was observed, an irregular Motion induc'd upon the animal Spirits, and consequently a continual *watching* and *raving*, and at last a *Frenzie*. But when there is any remission of this intensive Heat; that is, a less velocity in the Blood, the distended Fibres are thereupon relax'd, and the Nervous Liquid more equally distributed, and the *watching* changed into *Sleep*, which is longer or shorter interrupted or disturbed, according to the greater or lesser heat and fervency in the Blood; and *Tension* of the smaller Vessels.

Hence

Hence 'tis likewise plain, that the shorter and more disturbed the *Sleep* of *Delirious* People is, so much the greater is the Velocity and Heat of their Blood; and when the Sleep is moderate, that is, is neither too long, nor too short, disturb'd and interrupted with Starting, Dreams and Frights; it argues a temperate Motion of the Blood, and fairly promisseth a Recovery. But, when the fervency and heat of the Blood, and distension of the Arteries, Nerves and Fibres of the Brain hath continued a long time, they come to be so much weakned, relax'd, and unbended, that their Tone and Elasticity can never be recovered, and therefore the *Delirious* Person, after long *watching*, *raving* and *Frenzie*, falls asleep, or seems to be so, being depriv'd of all his Senses external and internal, so that he is no more *Delirious* nor sensible of Pain; there is yet some Motion in his Tongue, but he can't speak, because the Animal Spirits and Circulating Blood, are totally obstructed without any hope of Recovery.

Thus, in *Delirious* Distempers, which are caused by the acuteness of continued and hot Fevers, it is easy to distinguish; the Sleep that's Salutary and tends to recovery, from that which is Mortal, respect being always had to the Degrees of the velocity, Heat and Inflammation of the Blood, Distention or Pressure of the Nerves, Obstruction of their Liquid, and continuance of the Watchings.

Again,

Again, great hopes of Recovery in this Distemper, are had from all sorts of *Evacuations*, chiefly, because they check the velocity of the Blood, diminish its quantity, take off its obstruction and relaxeth the Nerves. This is remarkably certain in the *Delirium* of *Lunatics*, there being nothing more conducive to take off that Distemper than Evacuations by Sweat, Urine, Excretions by Stool, the Hemorrhoids and Hemorrhages. *Aph.* 21. § 6. *Aph.* 5. § 7. But, no just *Prognosticks* can be form'd concerning *Evacuations*, without a due regard had to their Quantity and Quality, and the time and place in which they happen. Thus, a copious bleeding at Nose, in the beginning and height of this Fever, is a good Sign, not only as it takes off the heat and fervency of the remaining Blood, but also, as it brings with it some part of the febrile Matter, which either mitigates the Distemper, or takes it quite off. But, on the other hand, no Sign is more dangerous and mortal, than when the Hemorrhage amounts only to a few drops; and of a blackish Colour. For, it signifies not only an extream weakness in the lesser Vessels, and acidity in the Blood, but also, an obstinate obstruction in its circulation through the Capillary Arteries, whose sides being pressed and embouldned by the rarified or stagnated Blood, and, finding no passage into the Veins, must recoil upon, or break those finer Membranes and Vessels. And,

The LAUGHTER of thoſe in a *Delirium*, hath been accounted a Sign leſs dangerous, than that of ſhedding involuntary Tears. But, 'tis no hard matter to know what's portended by both, if we advert to the great preſſure that's made upon the Capillary Arteries and other Veſſels of the Brain, when they are embouldned with a greater quantity of rarified or ſtagnated Blood than is uſual: For, thus the *Lymph* and Serous part of the Blood muſt be ſtrained into the *Glandula Lacrymalis*, and thence into the Angle of the Eye in watry Globules or Tears; but, this Moiſture is inſenſibly dried up and exhauſted by a long continued heat and inflammation of thoſe parts, and the little of it that's yet remaining, is thin and acid, appearing ſometimes in this, and ſometimes in the other Eye; than which, there is no Sign more pernicious and mortal, not only becauſe it ſignifies an extream dryneſs and want of *Lymph* and *Serum*, and a preternatural Secretion of it; but alſo, an irrecoverable flaggineſs and relaxation of the finer Membranes and Veſſels of the Brain.

Neither can a *Delirious Laughter* be leſs dangerous, unleſs it proceed from the Representation of ſome *Species* to the Mind and Reflection upon it: For, in this Caſe, this *Delirious Motion*, not only tells us the ſtate of the Brain, but likewise, that there is yet ſome motion and fluidity in the Animal Spirits, and vigour in the *Viſcera* and Muſcles of the Cheeks and Mouth. But, all the Motions of *Delirious Diſtempers* being (for the

the reasons above mentioned) irregular and undetermin'd, we are not to think that this of *Laughter*, can be any thing else than a Distension or Convulsion of those Parts, caus'd by a continued Heat, Dryness, and want of Moisture. For, in whatever part this is wanting, there must needs be a Contraction or Tension, that is, the part becomes inflexible or Convulsive. Hence it is, that Convulsive Motions usually accompany or follow upon a *Delirium* or *Frenzie*.

Hippocrates has considered this fatal Symptom of Fevers, as accompanied with a difficulty of *BREATHING*, and thus condemn'd it as a mortal Sign. (a) Neither had he a good Opinion of it, when it followed upon immoderate bleeding, (b) the Iliack Passion, (c) and Pulmonary Distempers, (d) The Truth of this first *Aph.* not to mention that of the rest, will appear to be very plain, if we observe, that the manner of *breathing* in those that are *Delirious*, is not always the same, but different according to the Degrees and Continuance of the Heat of the Blood, increase of the Fever, Generation and Velocity of the Animal Spirits. For,

As the first of these, namely, the Heat and Inflammation is augmented, the *Respiration* likewise, becomes more *lowd* and *slow*; but, in a little time it is quite otherwise, by reason of the alter'd state of the Nervous Liquid, of which a more than usual quantity, as well as too volatile and irregular in its Motion, may be generated or separated from the Blood in the beginning of the Fever.

Now

(a) Aph.

50. § 4.

(b) Aph.

9. § 7.

(c) Aph.

10. *ibid.*

(d) Aph.

12. *ibid.*

Now, 'tis no ſmall Portion of the Animal Spirits, that is requiſite and neceſſary to move the Muſcles of the Breſt, even in a State of Health: But, when the Fever is augmented, and the Patient is become *Delirious*, the quantity of this Nervous Liquid, is very inconfiderable, not only becauſe it is not ſupplied and generated by the Blood, (which after a long Heat and Inflammation is diminifhed vapid and impoveriſhed) but alſo becauſe it is obſtructed in its motion, and therefore the *Reſpiration* muſt be *ſlow* and *low*; but, in a little time, it comes (for the ſame reaſon) to be ſo *low* and *ſlow* that the ſick Perſon breaths no more.

It ſeems to be a happier *Omen*, when, a *Delirium* comes upon thoſe in a *Lethargy*, *Coma Vigil* and the like Diſtempers; becauſe it Indicates a Heat or Velocity in their Blood, and that the Viſcous and crude matter of the *Lethargick* Diſtemper, is rendred more fluid, and diſpos'd to be thrown out by the ordinary ways of Excretion, or that 'tis collected into ſome Tumor or Abſceſs. But whatever be the Advantage that's to be had from the *Conversion* or *Transmutation* of one Diſeaſe into another, (and this happens very often) yet, this of a *Delirium* or *Frenzie* is always to be ſuſpected as one of the moſt dangerous, in whatever caſe it Happens. Only, that which ſometimes intermits may be leſs dangerous, and go off at laſt upon a freer Circulation, and more equal Diſtribution of the Blood: But, when the Inflammation is great and of a long continuance,

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the *Delirium* muſt end in a *Frenzie*, gnawing of the Teeth, fix'd and unmoveable Eyes, inſenſible voiding of Urin and Excrements, a dry and black Tongue without Thirſt and Pain, a Gangrene of the Brain, or a Mortification and Corruption of its Parts, and a Diſſolution of the Animal Machine.

C H A P.

C H A P. II.

Of Prognosticks taken from the Senses.

THat all the Parts of Human Body owe their Origin to the Brain and its *Meninges*, as some will have it, is a Doctrine not yet commonly approved of; or confirmed by repeated Observations. But that there are in the Brain a stupendous and infinite number (besides those which are more visible and remarkable) of twisted Strings, Cords, or (as we may at least suppose them to be) hollow *Tubuli*, containing an active, spirituous and thin Liquor, of a greater or lesser Motion and *Impetus*, according to its *Flux* and *Reflux*, sometimes relaxing, and sometimes distending its Vessels, and receiving the Impressions of the Senses and Mind, is more certain. As also that they are either vibrated in their Extremities without the Brain, as in the Senses by external Objects, and the Pulsation is propagated to the Brain, representing to the Mind those *Species* that are proper to the Object; or, they are moved in their other Extremity within the Brain, and the Impression receiv'd from the Mind, is propagated in an instant to the external Parts; so that whatever be the Impression that's made upon those Vessels in either of their Extremities, the same must be propagated to the other. There

There is no one but knoweth that this nice Fabrick of the twisted Fibres or Nerves, and the Spiritous Liquor contained in them, may be a thousand ways disorder'd; and thereupon as many Diseases and Distempers brought upon the Body: For, when they are too flabby and flexible, their Elasticity is so weak and inconsiderable, that they cannot propagate the Impression that's made upon them by the Mind or external Objects, and when they are too dry and hard, they must be necessarily contracted, and their Liquor obstructed in its Motion. Hence are all the Disorders of the Senses, the State of which plainly indicates that of the Sick, the Nature of the Disease, and the result of it.

In all acute Distempers a particular regard is always had to the *Head*; chiefly because its parts being subtil and fine, and of a curious Structure and Mechanism, are soonest brought into disorder: And altho we cannot see what's transacted within the Brain; yet, its State and Condition is more than guess'd at, by its Effects upon the Adjacent Parts; Especially those of the *EYES*, which are variously affected, according to the disorders of the Brain, which are chiefly, if not altogether owing either to a *Plethora* of Serous and Viscous Humors, and that of the Blood, or to a wasting and decay of its Parts.

Under the first sort are comprehended, all Sleepy and Lethargick Distempers, in which, there is more or less Privation of all
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the Senſes, according to the Degrees of Cold and quantity of groſs Humours amaſſed in the Glandules of the Brain. Hence is the preternatural Sleep, ſwelling of the Eyes, and ſhutting of the Eye-Lids. For, when the Brain is ſtuffed and fill'd with cold and viſcous Humors, the Blood is ſo much altered in its quality, that it cannot circulate in a due quantity, neither can it Generate, or Separate any animal Spirits, but ſuch as are groſs, unactive and unfit for Muſcular Motions. The Muſcles upon this account become flabby and ſoft, and cannot be contracted: And if there be a greater Flux of the Animal Spirits, (whoſe Motion now is irregular) into the *Muſculus Conſtrictor*, than into the *Levator*; the Eye muſt be ſhut, and likewise ſwelled and enlarged, upon the addition of new Blood to that which was already too viſcous and clogged with groſs Humors in the Brain, the Colour of the Eyes; nevertheless, being rather pale than red and Sanguin, by reaſon of the whitish Humors mixed with the Blood.

From this and the like Appearances of the Eyes, the Event of all the Diſtempers, of which it is a Symptom, may be præſig'd; reſpect being always had to the manner of Sleeping and Continuance of it: For, as the Eyes are partly or entirely ſhut and cloſed, and the Sleep ſhort or profound; ſo is the Danger. Upon this account, a *Carus* is thought more pernicious than a *Coma* or *Leſchary*, and an Apoplexy as every one knoweth yet worſe (*a*). And, when either

(*a*) Hipp.
Aph 42.
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of theſe come upon an acute Diſtemper, the Caſe is deſperate and without Hope. For it ſignifies, as was obſerved, a diſſolution of the Parts, a total obſtruction of the Animal Spirits, and a Relaxation of the Nerves and Fibres that can never be recovered; eſpecially in Old People whoſe Veſſels and Canals are naturally render'd flaccid; and their Liquors exhausted, vapid, and impoveriſh'd.

The other mentioned diſorder of the Eyes, namely, that which is cauſed by a Plethora of Blood, obſtructed in the Capillary Arteries of the Brain, is their *Splendour* and *Sanguin Colour*: As this Appearance of the Eyes is always a Symptom of feveriſh Diſtempers, ſo likewise of amaſſed and ſtagnated Blood, and therefore was obſerved by *Hippocrates* (a) when it was accompanied with Deafneſs, Heavineſs of the Head and Diſtention of the *Hypocondria*, to prognosticate an Hemorrhage at Noſe. Of this Opinion likewise was *Galen*; having as he tells us, upon the certainty of this Obſervation, foretold an Hemorrhage at Noſe, in one of his Patients, in the preſence of many Roman Phyſicians. 'Tis plain indeed that this Prediction may oftner hold in thoſe that are Young, whoſe Blood is brisk and Spiritous, than in thoſe of a more advanced Age. But high coloured and *Blood-shot* Eyes in all acute Diſeaſes, is dangerous in both. For, as it ſignifies a greater than uſual quantity of obſtructed Blood, in thoſe finer Veſſels that are eaſily corroded, broken, and

(a) Coac.
Præ'ag.
§ 2.

cut, ſo is it ſtill uncertain, whether, the Blood iſſuing at the Noſe (if it happen at all) ſhall be of that quantity that's requiſite, effectually to mitigate the Symptoms of the Diſeaſe, or prevent its further Progreſs. But, if after this eruption of Blood, a Darkneſs or *Splendour* of the *Eyes* continue, accompanied with a cold Sweat upon the Forehead, Temples and Neck ; and the *Lips* and *Eyes* come to be Diſtorted, Death is at hand.

This bright and *Flame-Colour* is likewise obſerved in the *Eyes* and *Faces* of thoſe that are affected with Pulmonary Diſtempers : For, in ſuch, the Blood being obſtructed in the Lungs, muſt ſtagnate in the Branches of the *Vena Cava* that are diſtributed to the *Eyes* and *Face*, while ſome part of it is ſtill flowing into the Arteries. Hence, is the Swelling of thoſe Parts, and the brightness of their *Colour* : For, the Blood of thoſe in this Diſtemper is very thin, and purified from its groſſer Parts, which are intercepted and congeſted in the Lungs, where the Inflammation is greateſt. But more of this hereafter.

The *DEAFNESS* that comes upon *Fevers*, is commonly obſerved by Nurſes and Byſtanders to be a Sign of Recovery ; tho', in ſome Caſes hereafter mentioned, it is nothing leſs. For, all the Diſorders of the Brain, (of which this is a Symptom) whether cauſed by a *Plethora* of Humours, or interception of the Blood in its capillary Arteries, are always dangerous and ſuſpected ;

For this reason, *Deafneſs* can be no leſs ſuch, either with reſpect to its productive Cauſe or Effects, than are a *Delirium* and *Frenzy*, *Watching* and *Convulſions*, and other like fatal Symptoms of *Fevers*, which are the produce of intercepted Blood and Humours, and an inflam'd Brain. If this diſorder of the *Tympanum* of the Ear and auditory Nerves, be taken off by Evacuations, or an Hemorrhage, (a) which ſometimes happens, in this caſe only, and in ſo far as it is *Critical*, it may be ſaid to be a good Sign, but conſider'd in it ſelf, and with reſpect to its productive Cauſe, always a bad one. For, in a *continual Fever*, if one is ſo much weakened that he neither ſees nor hears, Death is not far off. (b)

(a) Aph.
28, & 60.
§ 4.

(b) Aph.
49. § 4.

But as every one may obſerve, one ill Symptom comes not alone, and therefore, this of *Deafneſs*, is always to be conſider'd with reſpect to others that accompany it, as alſo, the Nature of the Evacuations, (if they happen) eſpecially that of *Bleeding at Noſe*. For when theſe are not Large and Copious, and conſiſting of the Humors that ought to be ſeparated and thrown out, the Diſtemper is ſo far from being mitigated or taken off, that 'tis the more exaſperated, and followed with a train of worſe Symptoms, ſuch as are darkneſs and obſcurity, or redneſs of the *Eyes*, *watchings*, a *Delirium* and *Frenzy*.

Near a-kin to this of *Deafneſs*, is the *TINGLING* of the Ears, that commonly inſues upon ſome acute Diſeaſes. Of this

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the Sick ſometimes complain, and imagine they hear as 'twere the humming of Bees, ſometimes a *Tingling* and *Hiſſing*, and then, a more loud and interrupted Noiſe, which, according to *Galen* is cauſed by a *Flatus* or Wind, raiſed by the inflammation of the Brain, or rarefaction of its humidity, and communicated to the *Tympanum* of the Ear. 'Tis not indeed to be doubted, that, when there is an interception of the Blood, in the Arteries of the Brain, and a continual Addition, or acceſſion of new Blood, without being emptied into the Veins, thoſe little *Tubuli*, muſt be ſoon diſtended and enlarg'd, by an exceſſive Quantity of Blood, and there-upon an inflammation of the Part, and a preſſure upon the Brain, muſt inſue. And, there being alſo a Diſtribution of Arteries into the Parts near the *Tympanum*, and their Pulſation being augmented by the inflammation, muſt be propagated, together with a copious Evaporating Heat, to the Membrane of the *Tympanum*, moving and exciting in it, ſeveral kind of Sounds, according to the *Impetus* of the Heat, and pulſation of the Arteries.

But to drop this account of *Tingling* in the Ears in Fevers, and other like acute Diſtempers; *Hippocrates* affirms, (a) that, (a) Coar.
'tis a Mortal Sign, if it be continual and Præſag.
without Intermiſſion, or, comes at the begin- § 2.
ning of a Fever; and continues during the Progreſs of it: Such a Symptom being commonly followed by a *Delirium* and *Frenzie*, unleſs it be prevented by Art, or ſome natu-

ral Evacuation. But that in Chronical Diſtempers, or, before the Invaſion of them, this diſorder of the *Ears* threatens a long Continuance of the Diſeaſe, and the more certainly, if it be attended with violent Pains of the Head, Heavineſs and Giddineſs, Slowneſs of Voice, and benum'dneſs of the Hands.

As to the *SMELL* and *TASTE*, 'tis an ill Sign, when all ſorts of Food and Medicine that are offer'd to the Sick are Loathſome and Nauſeous, for it ſignifies a Relaxation of the Fibres of the Noſe and Tongue, or plenty of putrid Humours in thoſe parts, obſtructing the *Eſſuvia* that comes from the Object, and their impreſſion upon the Nerves. The Affections of the *Tongue* are excellently deſcribed by the Learned *Baglivius*, and hath well obſerved that it gives us the ſureſt Signs, by which we may know the State of the Blood, and conſequently that of the Body. For, ſays he, an acid *Taſte* upon the *Tongue*, betrays the acid Conſtitution of the Blood, and of the other Humors ſeparated from it, a Salt *Taſte* ſpeaks the ſaltneſs of the Blood, a bitter *Taſte* gives us to know, that it abounds with bitter Particles, a viſcid, mucous, inſipid *Taſte*, ſpeaks plenty of the like Particles. If the *Tongue* is moiſt, ſo is the Conſtitution of the Blood; if dry, then the Blood is of a dry inflammatory Nature. For this reaſon, we are not to look up-
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on this to be one of the worſt ſigns in Sick Perſons, that what is offered to them, *taſts* Bitter, Salt, inſipid, and the like, but rather when they have a total Aversion to every Thing that may be thought beneficial to them. But more of this and the Senſe of **FEELING** in the Sequel.

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CHAP.

C H A P. III.

Of Prognosticks taken from Pains.

D*ivisio Continui*, the antient Definition of Pain, is by some disprov'd and rejected, as being contrary to daily Observation and Experience. The Reasons adduc'd for this, are these chiefly, namely; That, not only the Bones, but likewise the Scull, and some parts of the *Viscera* and Flesh, can be cut and corroded without any Sense of Pain. And, although it be true, that, not only the Nerves, Membranes and Tendons, are the most sensitive Parts, and that others destitute of these, want Sense and cannot be pain'd: Nevertheless, the most sharp and intollerable *PAINS*, do not happen, when the Membranes or Nerves are dissected, but rather when they are entire. It is likewise certain, that, if the Nerves are prick'd with some sharp Instrument, or corroded with Salt Juices, there follow most sensible and exquisite *Pains*; but, are not caused by a Division of the Continuity of the Fibres, they being so fine and subtil, that they cannot be divided by the sharpest Point. Neither is Pain excited by a Dissolution of the Texture of the Fibres, any other way than by *Contusion*. 'Tis therefore more probable, that all *Pains* are caused by
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a *Tension*, or twitching of the subtil Fibres of the Nerves, whose Spiritous Liquor being irritated and stimulated, produceth an irregular Motion, which being communicated to the Brain, excites those Convulsions or Passions which we call *Pain*. Hence it is, that the most violent *Pains* inward or outward, are soon mitigated by *Narcoticks*, which, bring a sleep upon the Mind, take off the *Stimulus*, relax the irritated and distractile Fibres, and free them from *Tension*.

But, here 'tis to be noted, that all Irritations or Vibrations of the Nerves, and concussive Motions of the Parts of which they consist, doth not necessarily infer *Pain*, there being many such that have a contrary effect upon the *Mind*, exciting it to a Sensation of Pleasure, by a gentle and regular Motion of the Nervous Liquid. This then of *Pain* must be an irritation and vibration of the Nerves in the highest Degree, or such, that must bring an uneasiness upon the *Mind*, or *Sensio Molesta*. This will appear more plainly in the common Account of the various kinds of *Pains*, to which we must also retain, that we may have a better *view* of the following Observations.

Some *Pains* then are *Pulsative*, (so called) others that are felt as a dead weight lying upon the place affected, some with a *Tension*, or stretching of the Parts, some with *Cutting* and *Eating*; others with *Lancing*, *Pricking* and *Stiching*; and some that are caused by *Benumdness*, some *Pains* are

are *fixed*, and others *transient* and *fleeing*, some are *perpetual*, and others *intermitting*, some are *vehement* and *exquisite*, and others that are *tolerable*; some in the *beginning* of a Disease, others after the *invasion* of it; some affect the *external*, and others the *internal* Parts; some the *Noble*, and others the more *Ignoble Viscera*. All which differences of *Pains* (that only excepted, which is felt as a weight upon the affected Part, which seems to be rather a *Relaxation* than a *Tension* of it) being caused by a more or less Irritation, or Pulsation and Distention of the *Fibres, Nerves, and Membranes*, or Inflammation and Turgency of the *Blood and Humors* in the Parts affected, as in Abscesses, Nephretick Cholicks, Pleurifies, Dysenteries and Gout, &c. it will not be amiss shortly to account for some few of them. Thus,

PULSATIVE PAINS, as the Name imports, implies an unusual Pulsation in the affected Part, caused by an Interception of the Blood in the Arteries, so that, not having a free Course, it must be partly or altogether obstructed (be the cause what it will) and congested, because it cannot be emptied or derived into the Veins, nor return to the Heart, which is always discharging new Blood into the Arteries. Now, that this unusual quantity of amassed and collected Blood, must distend its own and adjacent Vessels, causing a *Pulsative Pain* to be felt in the Place; I think is very plain. For, there

there being no part of the Body except the Arteries, and they only, that have this natural Motion called *Pulſation*, of (which, in a State of Health one is not ſenſible; that is, it brings no uneaſineſs upon the *Mind*) when *theſe* come to be diſordered and loaded with a greater than uſual quantity of intercepted Blood, not only their *Pulſation*, but alſo their *Extenſion* is augmented, which muſt neceſſarily cauſe a *Tenſion* and *Pulſative Pain* in the affected Part.

PRICKING and LAUNCING PAINS, are likewiſe owing to a *Tenſion* of the Parts, but with this difference; that, whereas thoſe that are *Pulſative* are cauſed by collected and intercepted Blood in the Arteries, theſe, namely *Launcing* and *Pricking Pains*, (ſo called, becauſe they are felt, like the infliction of a ſlight Wound by ſome ſharp point,) muſt be occaſioned by ſome hot, thin, bilious and active Humour, inſinuating it ſelf into, and ſeparating the fine and ſenſible Parts of the Fibres and Capillary Veſſels. And that the *Pains* thus excited, are felt ſometimes in this and ſometimes in that part of the place affected, and alſo ſometimes exquisitely ſharp and cutting, and ſometimes more tolerable and eaſy, muſt be aſcribed to the *Impetus* of the inſinuating Humours, and difference of the Particles that are invaded. This is very remarkable in all Inflammations and *Hot Tumours* that happen in the Nervous Parts, from which there is a conſtant Expiration of hot Particles and *Eſ-*
fluvia,

fluvia, but when theſe are intangled and cannot fly off, they muſt invade the Parts of the nearer Membranes and Fibres, and according to their Subtilty and Motion, divide and diſtraſt, and pull them aſunder a thouſand ways.

Of the ſame nature almoſt are thoſe called *BREAKING* and *DISTRACTING PAINS*, being cauſed by a Divulſion or pulling aſunder of the *Perioſtium*, or Membrane that covers the Bones. That, this is done by whatever can inſinuate it ſelf, (whether it be a Hot, Cold, Thin or Groſs Humour, is all one) into the Parts of the External or Internal Surface, ſmall ſcattered Holes, Cavities and hollow part of the Bones, is very plain. For, it cannot be imagin'd that this fine Membrane that's ſo intimately united to the Bones, can be tear'd and pull'd from them, but with the moſt *exquiſite Pain*; eſpecially when the Membrane is ſtrong, thick, and reſiſtible, ſuch as are the *Pleura*, *Pericranium* and *Dura Mater*, &c. in which, are felt the moſt *intollerable Pains*; and the rather, becauſe thoſe Membranes are naturally diſtended, and don't eaſily yield, to whatever piercing and inſinuating Humours.

Again, *HEAVY PAINS*, to mention no more, ſeem to be different from all the former, for here is no *Tenſion* of the Parts, but rather a Heap and Collection of viſcous, groſs, cold, and Serous Humours, preſſing upon the adjacent Parts: (eſpecially, when there is any defect in the Nerves, Muſcles, or Mem.

Membranes of the Place) For, where-ever ſuch Humours happen to be, the parts are rendred flaccid, and incoherent, without *mutual Contact* or *Tenſion*, and as 'twere corrupted and putrified, or the Fibres and Capillary Veſſels are thickned and ſwell'd, and therefore muſt preſs upon ſome Muſcle and Nerve, or both, cauſing thoſe we call *Heavy Pains*. Add to this, that, the Blood in its Circulating Motion and uſual Velocity, coming into any part, the Fibres of which are relaxed and are become flabby, by plenty of the juſt now mentioned cold Humours, muſt be alter'd in its Motion, ſtagnate in thoſe relaxed and adjacent Parts, and with difficulty reach to the Heart again. How this alſo ſhould occaſion heavy Pains in any part thus affected, I think is no hard matter to conceive.

By what hath been ſaid, 'tis evident that ſome, or all, the fore-mentioned kinds of *Pains*, (this laſt only excepted) may happen in one place, and at the ſame time, according to the Concurrence of their productive Cauſes. And, that, when *Pains* become very *exquiſite* and *vehement*, the *Tenſion* of the parts muſt not only be very great, but alſo propagated to the whole System of the Nerves, Muſcles, and Veſſels, by reaſon of the conſent of Parts, either with reſpect to their Origin, or with reſpect to their Vicinity and Continuity, but always *mediantibus fluidis aut ſolidis*, and that ſuch *Pains* may terminate in Convulſive Motions, Palſies and Abſceſſes, as it often happens in Cholick Pains, *exquiſite*
Pains

Pains in the Head, and Inflammations of the Brain.

This being premised, in order to know the result and event of *Pains*, it will, no doubt, be granted, that all sorts of them from what ever Cause without, or Concomitant to any other Disease, must be of a bad Character; especially, if they be fixed a long time in any of the Nobler *Viscera*. For they impare the Strength of the Patient, and obstruct the Circulation of the Blood, Concoction, and Secretion of the Humours, as may be observed in that of *Sweat* and other Liquids, which, are Immediately suppressed, upon the Invasion of grievous and exquisite *Pains*. But in acute Diseases, 'tis accounted a Sign of Recovery, when *Pains* invade the Legs and Feet, and happen upon a *Crisis* or Signs of it. But tho' such *Pains* speak an *Impetus* of the Blood and Force of Nature, to throw off the Matter of the Disease upon those more ignoble Parts: Yet, when they go off without any apparent Cause, as the administration of Medicine or Natural Evacuations, the Humours may be justly suspected to have returned into the Mass of Blood, by which, the Case is rendered more dangerous than it was. And a happy Event of a *Crisis* in acute Distempers, depending upon meer Chance, or, a favourable turn of *Nature*, is always uncertain and never to be rely'd on.

'Tis a fatal *Omen*, when *Pains* that commonly accompany the Inflammation of any Part, especially those that are Membranous,

as in the caſe of *Pleurifies*, go off, while the Fever continues and increaſes, and cold Sweats break out with a low intermitting and quick Pulſe: For, ſuch become *Delirious* in a little time, and ſoon after expire, the Inflammation having terminated in a Gangrene. There is always leſs Danger in *Shifting Pains*, than in thoſe that are *fixed* to one place, becauſe theſe (if accompanied with a Fever) uſe to terminate in an *Impoſtume*. 'Tis likewiſe a Sign of Inflammation, and that the Humour tends to ſuppurati-
on, if *fix'd Pains*, with Swelling, and great heat in the *Hypochondria* Breſt and Back, are followed with a *Shivering*.

Near a kin to *Shifting Pains*, are thoſe that are *periodically* exaſperated, and return at a certain Hour; ſuch Pains are not cauſed by any Peccant Humour bred in the place affected, otherwiſe, they would be more conſtant and continual, and therefore, ſeem to be derived from ſome other Part. For, Humane Body is a bundle and compound of Veſſels, Nerves, Fibres, &c. variously interwoven, and correſponding to one another, bending this and t'other way, as they are influenced by the Fluids that move within, as by a Spring, and from hence proceeds that great *Sympathy* and *Conſent* of Parts cauſed by their Vicinity to one another, as that of the Midriff and *Pleura*, the Bladder and *intestinum rectum*, or, by a communication of Veſſels among themſelves, or that of adjacent Parts, or the Similitude and Continui-

ty of Substance, ſuch as that of the Membranous Parts.

Violent PAINS in the SIDES, are always dangerous. In Old Men they are for moſt part Mortal; Chiefly, becauſe they have not Strength to diſcharge the Matter, and Conſumptive Perſons ſeized with them, become *Delirious* with a high Fever ſoon after, and die in a few days. But when this Pain and the Circumſtances juſt mentioned appears, 'tis a Sign that the Conſumption has been owing to a preternatural connexion of the Lungs with the Ribs.

Such PAINS of the HEAD, as are violent and continual in acute Fevers, and accompanied with other Ill Signs, as *immoderate Watching*, *Raving*, an *uneasy* *Respiration*, and *thin* *Urine*, are for the moſt part Mortal. (a) The reaſon of this Obſervation is taken from the productive Cauſe of ſuch Pains, namely, an augmentation of the velocity and quantity of the Blood, in the Arteries of the Brain: an augmented Motion rarifies the parts of the Blood, which, preſſing upon the Membranes of thoſe little Channels, tear and pull them aſunder, cauſing thoſe inſupportable Pains, which, after a long Continuance, are followed with *watching*, *raving*, and other fatal Signs that terminate in Death. And thoſe who are ſound and in Health, if they be ſuddenly taken with Pains in the Head, become Dumb and fall a ſnorting, Die in ſeven Days (b) unleſs a Fe.

(a) Hipp.
3 Progn.

(b) Aph.
51. § 6.

a Fever enſue. For, that takes off the Symptoms of Death and *Stupor* of the Tongue, by a brisk circulation of the Blood in its Channels.

We have always a good Opinion of Pains that are tranſlated from one place to another, eſpecially from the Head, Throat and Breſt, to the Legs and other extreme Parts, but there is no more dangerous Sign, than, when Pains continue after thoſe called *Critical Sweats*.

It has been obſerv'd, that in all Diſeaſes, eſpecially thoſe that are *acute*, if an Inflammation of the *Abdomen* appear and continue, 'tis the Harbinger of Death. But if there be continual Pains about the Belly and *Abdomen*, they ſignify only an approaching Suppuration. (a) And thoſe Pains that invade (a) Aph. the *Hypochondria* or Parts adjacent to the Li- 22. § 7. ver, are taken off, by the acceſſion of a Fever, (b) but 'tis a dangerous Symptom, when (b) Aph. one is taken with Convulſions and Sharp 52. § 7. Pains in the *Viſcera*, (c) and alſo in the (c) Aph. Throat and Ears in acute and ardent Fevers. 66. § 4.

C H A P. IV.

Of Prognosticks taken from the outward State and Poſition of the Body.

BY converſing with the Sick, we come to know the Occaſional Cauſes of their Diſtempers; but, they cannot tell us what are the inward Tranſactions of the Liquids and Solids, and the predominant quality or morbiſick Diſpoſition of them, whether 'tis ſharp, acid, viſcid, inflammable, or coagulating; or, whether the Blood abounds with moiſt, terreſtrious, fiery, or fixed and unactive Particles. But, whatever be the Chinges and Alterations that are acted in the Springs and Liquids of Humane Body; yet, their Effects muſt be always expoſ'd to our view, and come under the Cognizance of our Senſes. Thus, we ſee when the body is hot or cold, dry or moiſt, which indicates its inward State and Condition, and, what will be the Iſſue and Event of the Diſtemper.

HEAT is the effect of *Motion*, and that of Humane Body, is owing to the Circulation and Velocity of the Blood; when it is brisk and Spiritous, the *Heat* is diſtributed to all the extream Parts, and perceptible in the *Skin*; which, by the *Thermometer*, is found

found to be naturally hotter by one Degree, than the *Heat* of the Air in Summer, leſſer by four Degrees, than the Heat of boiling Water, and yet leſſer by Twelve, than that of hot Iron.

This *Heat* of the *Skin*, is not produc'd by that of the *Heart*, as was believ'd by the Antient Phyſicians. For, it is neither hot nor humid, but as it is waſhed by the circulating Blood, eſpecially in the Arteries, where its *impetus* and reſiſtance is greateſt; ſo that according to the Degrees of Velocity, and augmented Motion of the Blood, ſo is the *Heat* of the *Skin*, and the *Heat* of the Parts, in proportion to their Vicinity to the Heart. When the muſcular force and power of the Heart, by which, the Blood is diſtributed into all the Parts of the Body, comes to be weaken'd and enervated; Or, which is the ſame, when the Pulse is languiſhing and weak, the *Heat* of the Body muſt likewise be diminifhed. For, the *Pulse* is the Diffuſion of *Heat*.

Humane Body, is a compound of various and different Channells and Liquors that move in them. The firſt of which have a determinate Size, Number, Denſity, Elafiicity, Figure, Proportion and Combination, from which they have the Denomination of Arteries, Veins, Nerves, Fibres, Lymphatick Veſſels, Bones, and the like. The Liquids conſiſt of fluid Particles, ſome whereof are groſs, others fine and ſubtil, and adapted to Motion; which, when it is equal and always the ſame; ſo likewise is the

Heat of the Body. But, thoſe Liquids being ſubjected and expoſed to a thouſand Changes, Alterations and Impreſſions from without and within, by the acceſſion of foreign and Heterogeneous Particles, the variety and different Degrees of *Heat* and *Cold*, which we ſee in Sickneſs and Diſtempers, muſt needs inſue, beſides that which is owing to different Ages in the ſame Body, difference of Sex, Stature and Proportion in a State of Health.

Thus, ſuppoſing an equal contraction of the Heart; Thoſe who are of a low, are hotter than thoſe of a larger Stature; for, the Parts of the firſt, are leſs diſtant from the Heart than thoſe of the laſt, and the Velocity of the Blood is diminifhed according to the ſame diſtance from it, and alſo the *Heat* of the *Skin*, which, as was obſerv'd, is the Effect of the Circulating Motion of the Blood. Hence it is, that *Cæteris paribus*, a Child is hotter than a Youth or Stripling; and a Youth is hotter before, than after he is arrived at his full Growth and Stature. For, both have a greater quantity of Blood, circulating within narrower Limits, in proportion to their Body and ſolid Magnitude, than thoſe of more advanc'd Years. Their Bones being more ſoft and Cartilagineous, their Fibres more open and Lax, and their ſolid parts fuller of Moiſture, and cannot come to that hardneſs and conſiſtency, that's obſervable in Old Age, without diminifhing and exhauſting the Liquid of Blood, of which they Conſiſt.

'Tis a commonly received Opinion, that, Men are hotter and dryer than Women: That they are dryer is plain and certain, but ſome will not allow that they are hotter, for the ſame Reaſons that Children are of a hotter Conſtitution than Men, Women, *Cæteris paribus*, having more Blood, and being for the moſt part of a lower Stature, and ſooner arrive to the height of it than Men, ſuppoſing always an equal Contraction of the Heart. Now, that Women are more abounding in Blood than Men, will never be denied, by thoſe who know that the pure and ſincere Blood that's monthly evacuated, is cauſed by its *Plethora*, and not by *Fermentation*; as by ſome is erroneouſly believed.

This was to be premiſed, for the better underſtanding the State of the Body, from the *Heat*, *Coldneſs* and *Moifture* of it in Sickneſs; eſpecially, in Feveriſh Diſtempers, in which, as we have ſeen, the *Heat* of the *Skin* is greater or leſſer, according to the Velocity and rarefaction of the Blood. By how many degrees this Heat is greater in Fevers than in a natural State, is not here to be inquir'd into; whatever it be, 'tis always greater than the uſual Heat, to which the nearer is approaches there is the leſs Danger. But, tho a gentle and moderate *Heat* has obtained this Character of a good Sign; Yet, 'tis carefully to be conſider'd, whether it be equal all over the Body, not that there ſhould be the ſame Degree of it in the remote and extreme Parts, as in thoſe adja-

cent to the Heart, in which it is greateſt; but whether it be proportioned to the diſtance from it.

The reaſon of this Caution, is, the frequent miſtakes that happen in *Prognofiicks*, taken from this *moderate Heat*, by which, not only the Patient, but likewise the Phyſician, has been impoſed on, there being ſometimes a latent Malignity (as 'tis called) not obſervable, either by the Pulse or *Heat* of the Body, both having a reſemblance, to that of one in Health, while the Flame is raging within, ſcorching and burning up the *Viſcera*. The more that the Blood is diſtingag'd from, and hath attenuated the Heterogeneous Humours, by which it was intangled and intercepted in its Motion; ſo much greater is the *Heat* of the *Skin*, as we ſee in Ardent Fevers: But, in thoſe that are Malignant, there are always ſome viſcous and groſs Humours mixed with the Blood, that checks it in its Motion, and makes the *heat* of the *Skin* to be the more *temperate* and *moderate*. And,

We are further to obſerve, whether this *moderate, gentle* and *equal Heat* of the *Skin*, in feveriſh Diſtempers, be likewise accompanied with an equal and univerſal *Softneſs* and *Moifture*. For, a burning Heat is always Dry and without *Perſpiration*, as in an *Epiſial* or *Lipyrria*, and the *ſoftneſs* and *moifture* of the *Skin* is *unequal*, as in Malignant Fevers, in which the *Hypochondria* are for the moſt part dry and hard, and alſo in thoſe who are *Hellick*, whoſe *Hypochondria*
are

are, (eſpecially the right) remarkably *hot*, chiefly, becauſe it contains the greateſt part of the Liver, in which the Bile is ſeparated, and being in this Diſtemper hotter than in a Natural State, it muſt cauſe a diſproportioned Heat in the place; beſides, that their Skin is thick and rough, and the Heat of it unequal, eſpecially after eating.

But though the *Heat* that's commonly obſerv'd in Fevers, be more intense by ſeveral Degrees, than this juſt now mentioned; yet, if it be accompanied with the ſame Conditions of *Equality*, *Softneſs* and *moiſture* of the Skin, 'tis not to be accounted one of the Dangerous Signs: For, it ſpeaks a brisk and free Circulation of the Blood, prevents the Inflammation of the *Viſcera*, promotes inſenſible Perſpiration and Coction of the Humours. And if the *inequality* of the *Heat*, is obſerved to be in the extreme Parts, *i. e.* if the Legs and Feet, Arms and Hands are hotter than uſual, there is hope of a Solution of the Diſeaſe and *è Contra.* (a)

(a) Aph.
1. § 7.

The Heat of the Blood, and conſequently that of the Skin, being (as we have ſeen) the reſult of its Motion and Velocity, 'tis plain, that the *Coldneſs* of the *Parts* that happen in Fevers muſt be owing to a diminished Motion of the Blood, either from groſs and viſcous Humours obſtructing its Motion. Or, becauſe its Velocity being diminished in every Section of the Arteries, according to their diſtance from the left Ventricle of the Heart, it muſt be very inconfiderable in the Capillary Arteries of the ex-

treame Parts excepting thoſe of the Brain, in which, thoſe Veſſels being very numerous and near to one another, the Motion and Heat is more preſerv'd than in thoſe Parts that are more remote. Or, this diminished Motion of the Blood and *Coldneſs* of the *Body*, eſpecially, that of the extream Parts, may be cauſed by an Interception or Defect of Animal Spirits, not ſeparated from the Blood in the Brain, and diſtributed to the Fibres of the Heart, to promote its pulſive Motion; in this caſe likewiſe, the *Heat* is diminifh'd, and a *Coldneſs* brought upon the *Body*.

But, whatever be the Cauſe of it, *COLDNESS* of the Parts is always ſuſpected, and in continual Fevers, is, for moſt part Mortal, eſpecially in thoſe of a weak Conſtitution. In Chronical Diſtempers, it is not ſo dangerous, nor in Old People, whoſe extream Parts, namely, the Feet and Hands, Noſe, and Ears, are uſually very *Cold*, neither is the *Coldneſs* that happens in intermitting Fevers, nor upon the firſt invaſion of thoſe that are continual to be much dreaded. But, which is chiefly to be obſerv'd with *Hippocrates*, (b) is, when the Head and Feet are *Cold*, and at the ſame time, the Sides and Belly are intently *hot*, and when after a moderate or Intenſe *Heat*, the extream Parts become *Cold*, and never after recover their uſual, or that *Heat* that commonly accompanies Fevers. Theſe are two Caſes that have been obſerved to be of fatal Conſequence.

There

(b) 2. Prog.
4.

There is yet another, namely, a *Viciffitude* of *Heat* and *Cold*, coming either on a fudden or gradually : But whatever be the manner of the *Acceffion*, it ſpeaks an *Omenous* and dangerous diforder in the *Blood* and *Spirits*, an obſtruction in its *Motion*, or at leaſt a *Stagnation* of it in ſome of its *Chanel*s. This *Viciffitude* of *Heat* and *Cold*, is to be conſidered, with reſpect only to continual Fevers, and *Pulmonary* Diſtempers. For, that which happens in intermitting ones, are more eaſily check'd and controul'd by the *Peruvian Bark*, and other *Febrifuga*, to the unſpeakable Benefit of Mankind.

SPONTANEOUS WEARINESS, and the *Poſition* of the *Body* in the diſorders of it, may ſeem to be of ſmall Moment. But, that they may deſerve ſome conſideration in the *Prognofticks* of Diſeaſes, will appear in the Sequel. Not to mention that 'tis often a Forerunner to ſome acute Diſtemper, (c) as (c) Aph. every one muſt know, that is but moderate-ly ſkill'd in the Nature of Humane Body. It ſometimes ſeizes all the Parts, eſpecially the *Muſculous* and *Cutaneous* Ones, ſometimes the *Back* in acute Diſeaſes, and ſometimes the *Spleen*, *Belly*, the *Midriff*, and *Stomach*, and ſometimes the *Arms*, *Thighs* and *Legs*, and as it ſeizes different Parts, ſo likewise at different times, as at the Beginning, and ſometimes at the heighth and declination of the Diſeaſe.

WEAKNESS and *WEARINESS* are manifeſtly different ; For the firſt is owing to a defect,

deſect, and want of the motive Faculty. But *Wearineſs* is a certain Paſſion of Anguiſh and Uneaſineſs, that comes upon violent Motions of the Body. In animal Motions, a ſpiritu-ous Juice is inſtill'd from the Nerves into the Fibres of the Muſcles, and the want of this Liquor cauſeth Wearineſs. Or, this Spiritu-ous Juice is diſtill'd into the Mouths of the Nerves in the Muſcles; and therefore when the Spongiouſ *Tubuli* of the Nervous Fibres are once ſoaked with it, it may be continually ſupplied without interruption. But, after a great expence of it; thoſe ſmall Veſſels come to be exhausted and dried, Leav-*ing a Wearineſs* in the Place. Thus it is cauſed by want or obſtruction of the Nerv-ous Liquor, by a Leſion of the Organs, and by an *inſarctus* or *Plethora* of Humors. Hence it is, that in ſome acute Diſtempers, Strength is gone all on a ſudden, not be-*cause there is want of Animal Spirits, but because their Motion is obſtructed, interrupt-
ed and ſuſpended, and this alſo may be the
reaſon, that Plethorick Bodies, are ſoonest
affected with the Senſe of Wearineſs.*

But, now to conſider it as a *Symptom* of a *Fever*, or ſome ſuch acute Diſeaſe, in which, when it comes upon the Thighs and Arms, accompanied with other good Signs, it tells us that the Morbiſick Matter, as was formerly obſerved of *Pains*, is caſt upon thoſe ignoble Parts, and that the Diſeaſe tends to a Solu-*tion. For, it is then only, that the Patient
comes to be ſenſible of this Tenſive heav-
neſs and wearineſs, eſpecially, in the Cuta-
neous*

neous Parts, of which, he could have no Sense in the raging height of his Distemper. When the Humours are concocted, and their grosser Parts refin'd, and rendred fit for excretion, they are thrown out, *quâ data porta*, by Sweat, Stool, Urine, &c. But, if they reach no further than the milliary Glands of the Skin, there they are lodged, till they be carried off some other way. For, in the ordinary and natural Motion of *Fluids*, that serve either for nutrition or excretion, there are necessary Passages and Channels, through which they run easily. But, in extraordinary Cases, as all Diseases are, Nature finds out extraordinary ways, by which it throws out the noxious matter, or at least puts it in a less dangerous place. But after all, a *Spontaneous Weariness*, is a dangerous Sign, when it is accompanied with Pains in the Head, Thirst, Watching, Weakness, and other like Symptoms, even at the declination of the Disease, and when the peccant Humour is not duly concocted.

The *Position* of the Body, deserves likewise to be regarded and consider'd; For, by it we come to know its vigour and weakness. Tho' Nature be surprizing and wonderful in all its Laws and Actions; yet, who is not struck with amazement that contemplates her in the Motions of the Parts of Humane Body? When one is in Health, how surprizingly great is the Power and Energy of his Muscles? How many different Ways doth one manage them at his pleasure? excepting some few, the management of which Nature has

has reserved to her self, as that of the *Heart*. But, upon the Invasion of a Disease, he that could make the Ground tremble under him, is not able to move himself without help, and if he has yet any little Strength, he moves himself into a thousand Postures, endeavouring to be quit of his Pain and Uneasiness. From those various Positions of the Body, we come to know his State and Condition, and the Event of his Sickness.

The *SHIFTING* of *POSTURES*, cannot be ascribed to any thing else, than to the raging Heat, which the Sick Person finds all over his Body, especially in his Breast, occasioned by the excessive Heat in his Blood, and sharpness or irregular Motion of the Animal Spirits. This makes him peevish and uneasy, and sometimes he voluntarily turns himself, this and 't'other way; for ease and mitigation of his Pain. But, he is also sometimes under a Necessity of altering his *Posture* of Lying, by an Irritation and *Stimulus* of the Nervous Liquid, and its irregular flux into this or 't'other Muscle.

To inquire, whether the Actions of the Muscles, which are the Organs of Motion be performed by Contraction or Turgency, caused by the influx or Motive Power of the Blood, pressure of the ambient Air, impulsive Motion of the Heart or Animal Spirits, would be besides our purpose. Neither shall we inquire how and after what manner, the usual Motions and muscular Actions are suspended and interrupted. Only, it may be ob-

obſerv'd, that there is greater difficulty in lying upon either ſide, than upon the Back, becauſe the Body muſt be ſuſpended, or reſt upon the narroweſt Surface or Point, the Feet, Hands and Head, being alſo accommodated accordingly, ſo that the ſide muſt be the center of Gravity of thoſe Parts. Now, tho' this Poſture is moſt adapted to Motion, or, for turning to the Breſt or Back; yet to begin and continue ſuch an *Æquilibrium*, as lying upon the ſide is, a greater quantity of Animal Spirits is requiſite, than can be ſuppoſed to be in the Body, or ſeparated from the Blood in time of Sickneſs.

Every Body knows, that the *Position* and *Poſture* of lying in time of Sickneſs, muſt be the ſafeſt which approaches neareſt to that which is uſual, in a State of Health; But, this rarely happens in ſome acute Diſtempers, by which the Patients Strength is ſo much diminſhed, that he muſt lie upon his Back, which is a common and ordinary Sign of great Weakneſs, and the Poſture of dying Perſons, and therefore juſtly ſuſpected.

But, this *Poſture* hath been commended, in as much as it refresheth the wearied Patient, all the Muſcles being then at reſt from *Tenſion*, excepting thoſe of the Breſt and Heart: And that, becauſe thoſe in Nephretick Cholicks and other Diſtempers, uſually throw themſelves upon their Backs, and are eaſed by that *Poſture*. Whatever be of this, yet 'tis certain, as was juſt now obſerved, that an involuntary lying upon the Back is a
Sign

Sign of great Weakneſs, and yet more Dangerous, when one cannot turn himſelf to either ſide, and when aſſiſted by others, his Body reſembles a Load or weighty Burthen; or, when his Hand, that unwilling and with difficulty is reach'd to the Phyſician, falls down like a Stone by his ſide. And 'tis needleſs to obſerve how *omenous* it is, when the Head is erected towards the Pillow, it falls backward, diſcovering the Throat and Fore-part of the Neck; or, when the Chin is lifted up, it falls back immediately towards the Breſt: For, theſe are well known to be certain Signs of inſtant Death; As alſo to ſleep with open Mouth and hanging Jaws; for, both denote an inward Inflammation, or an extream weakneſs, and irrecoverable relaxation of the Muſcles, and diſbending all the Springs of the Machine.

C H A P. V.

Of Prognosticks taken from the Pulses.

TIS now well known that the *Heart* is a *Muscle*, of the same Nature with those that serve to move the joints and other Parts; that it consists of strong Carnuous Fibres, which are easily contracted, but cannot be extended in length, or distracted; that they are swell'd and puſt up to a hardness, especially towards its Point, in *Pulſation*; and, that its Motions do not depend upon our Will and Pleasure, that some of its Fibres are external and others internal, both arising from, and terminated in its *Basis*; That, the first fort descend from the *Basis* in a Spiral Line, from right to left, towards the *Point*, where, making a Demi-Circle, return again Spiral ways from the left to the right, towards the *Basis*; and that, the internal Fibres are straight and parallel, descending from the *Basis* to the *Point*, and returning to the *Basis*, in which they are inserted and terminated.

The *Use*, as well as the wonderful *Structure* of this noble *Viscus*, is also notorious, it being the Principal Engine in the Circulation of the Blood, which, being received into its Ventricles, namely, that of the *Vena Cava*, into its *Right*, and that of the Pulmonary

nary Vein (after having been subtilized and attenuated in the Lungs) into its *Left*, is thence distributed by the Arteries, to all the Parts of the Body, according to the Laws of its Circulation.

But, to supersede any further inquiry into the Structure of the Heart and Mechanism of its Contraction and Dilatation, we are only to observe, that the Artery adjoining to it, not being capable to admit and contain all the Blood that's squeez'd into it, at every contraction of the Heart: Or, there being a considerable disproportion, between the Capacity of the left Ventricle of the Heart when it is dilated, and that of the Artery next adjoining to it. 'Tis therefore necessary, that, the Membranes of this Artery, notwithstanding their Firmness and Tension, should be dilatable, and yield to the *Impetus* and *Trusion* of new Blood at every contraction. Now, the Contractions of the Heart being frequent, neither this adjoining to it, or the other Arteries can ever be emptied. For, the new Blood at every Contraction, must press upon, and push that already in the Arteries, towards their furthest Extremities, to be thence deriv'd into the Capillary Veins, for the Continuance of the Circulation.

Now, this Rencontre of the old (may it be so called) and new Blood cannot happen, without a notable Resistance and Concussion of the Arteries; especially, that adjoining to the Heart, where the Muscular force and impetus of the Heart is greatest; there-

therefore, the Impreſſion that's made upon this at every Contraction, muſt be propagated to all the Arteries in the ſame inſtant of time; only with this difference, that the Impreſſion or *Impetus* is always greateſt in their extremity neareſt the Heart.

But, this *Dilatation* of the Arteries at every *Contraction* of the Heart, is of a very ſhort continuance. For, they being dilatable *Tubes*, as was obſerved, are ſwelled and enlarg'd at every *Contraction* or *Pulſation* of the Heart. But, immediately after the Pulſation, they recover their former State, the Portion of Blood that was ſqueez'd into them, being deriv'd into the Capillary Veins, by the Contraction of the Tranſverſal Fibres of the Arteries.

Thus, by a continual and ſucceſſive *Dilatation* or *Contraction* of the Heart and Arteries, is the Vital Fire continued and preſerved. But, the Blood or Liquid that circulates in them, being expoſed to many Impreſſions and Interruptions, both from without and from within; It is therefore conſidered, in all the Diſtempers and Diſorders of the Body (of which it is the great Spring,) as the ſureſt Teſt, by which its State and Condition may be beſt known. For this End, its pulſation in the Arteries is always adverted to, becauſe it points out and informs us what's tranſacted in the moſt retir'd Corners of the Machine; eſpecially in acute Diſtempers, the Chronical ones, proceeding frequently from a Diſorder in the Solid Parts, or, from a vicious indigeſtedneſs and

E. groſſ.

groſneſs of other Fluids, are not ſo nicely regarded or known as the former, which are more dangerous, and come to their Period in leſs time.

It would be beſides our purpoſe, as well as unneceſſary, (the moſt ſolid Doctrin and finiſhed account of the Pulſes, and differences of them, being already to be had from the Excellent *Bellinus*) to make any further Advances on this Head, were it not in order to have the beſt *view* we can, of their *Prognosticks*, and what's portended by them.

We are then to obſerve with this great Man, that the Pulſation of the Arterie, being a ſucceſſive Contraction and *Dilatation* of it, cauſed by the impulſe of the Blood, and known to us by the touch and Application of the Finger; the difference of the Pulſes, even in a natural State, muſt be owing to the *Contraction* and *Dilatation* of the Heart, the State of the Blood and Arteries. For, when the Heart is contracted or dilated, ſo are the Arteries at the very ſame inſtant, if the contraction of the Heart is *frequent*, ſuch is the *pulſation* of the Artery, if it is Weak and Languiſhing, ſo is the Pulſation of the Artery, and its preſſion upon the Finger hardly perceptible; again, if the Heart move but ſlowly, *i. e.* a more than uſual time is ſpent betwixt one Contraction and another, ſo doth the Artery. Now, that thoſe and many other Changes and Alterations, even in a Natural State, may happen to the Motions of the Heart, according to the different Ages, Conſtitution, Paſſions of the Mind, and Motion

tion of the Body, &c. is very plain.
But,

As the different Pulſations of the Artery, is owing to the various and different Contractions of the Heart, ſo are theſe to the different State of the Blood, namely, as it is of a greater or leſſer quantity. For, ſuppoſing a free Circulation, and a great quantity of Blood to be in the Body, 'tis certain, that a proportioned quantity of the whole ſtock, muſt be derived into the Heart, when 'tis dilated, and Squeezed out of it by Contraction into the neareſt Artery; which for the Reaſons above mentioned, muſt make the Pulſation the greater, and *è Contra*, when there is only a ſmall Quantity of the circulating Blood. And this, beſides its various State and diſpoſition, with reſpect to the Age, Conſtitution, Season of the Year, Climate, Paſſions of the Mind, Motions of the Body, before or after Eating, Sleep and Watching. And, Laſtly, The difference of the Pulſes, are partly owing to the different Capacity and Amplitude, Hardneſs and Thickneſs, Tenſion and relaxation, &c. of the Membranes of the Arteries. Thus, when they are narrow, the Blood muſt make the greater Preſſion upon their Sides, and the Pulſe is the ſtronger, and *è Contra*, if they are of a greater Amplitude.

Thus far concerning the Cauſes of the Differences of Pulſes in a Natural State: To carry our Inquiries further, or to account for the many and different ways, by which,

the Pulſations of the Arteries may be altered and changed in the diſorders of Sickneſs, would bring us under a neceſſity of inquiring into thoſe, by which, an Indiſpoſition may be brought upon the Blood. But this being inconſiſtent with our preſent purpoſe, I ſhall only obſerve, that whatever it be, it muſt be aſcribed to an Exceſs or Defect of it in its *Quantity*; or, an Alteration in its *Quality*, by an Augmentation or Diminution of its component Parts, or whatever can diſorder their *Cohesion*. The Effects of which upon the Arteries, having given Birth to a Nauſeous and unneceſſary Catalogue of the Differences of Pulſes, it may be proper enough, to retain to thoſe only that are moſt remarkable. And theſe are,

1. With reſpect to Motion, and then the Pulſe is *Swift* or *Slow*. 2. With reſpect to the Blood and *Impetus* of the Heart, the Pulſe is Strong or Weak, *Full* or *Empty*, according to the greater or leſſer Quantity of Blood ſqueezed into the Artery. 3. With reſpect to the Artery, the Pulſe is *Hard* or *Soft*. 4. The Pulſes are *equal* or *inequal*, with reſpect to themſelves, or, one part of the Artery to the other. Beſides theſe, there are other Compound and Singular Differences of the Pulſes, as the *Intermitting* Pulſe, the *Undulatory* and *Creeping*, the *Hædick* and *Convulſive*, &c.

But in ſhort, when an Artery is dilated more than is uſual, the Pulſe is then ſaid to be *vehement* or *ſtrong*. If it be leſs dilated than

than is uſual, 'tis then *Weak* and *Languish-
ing*. And if betwixt any two *Dilatations* of
the Artery, there is more time perceived
than is uſual, the Pulse is called *ſlow*. And
if leſs time is obſerved, 'tis then ſaid to be
frequent: Again, if the Tunicle of the Ar-
tery, from whatever Cauſe is harder than
uſual, it cauſes a *hard Pulse*, and *è Contra*.
Laſtly, an *equal* and *unequal* Pulse, are only
a *Species* of a *quick* and *ſlow* one. For, if
either of them be always like to it ſelf, then
is it *equal*, and if it be not conſtantly like to
it ſelf, 'tis then *unequal* and *intermit-
ting*.

So that the moſt uſeful Differences of the
Pulſes, and which fall under the Cogni-
zance of the Phyſician, are, the *ſtrong* and
weak, *ſoft* and *hard*, *inequal* and *intermitting*,
quick and *ſlow*. Of the laſt of which we are
always doubtful; For, a *ſwift* and *ſlow*
Pulse and the Degrees of it, depending upon
the Meaſure of time, can hardly be diſtin-
guiſhed by the application of the Finger.
In one in ordinary Health, and in a Natu-
ral State, there are commonly reckon-
ed, three Thouſand fix Hundred Beats or
Pulſes in the Artery in one Hour, and eve-
ry one of theſe to be equal to a Second, or
the three Thouſand fix Hundredth Part of an
Hour, ſo that the duration of the Dilatati-
on of the Artery, muſt be ſo ſhort and in-
conſiderable, that 'tis known with great dif-
ficulty: eſpecially in thoſe who are young,
and whoſe Circulation is accompliſhed, in a

very little time, with respect to those of a more advanc'd Age and larger Size.

But, if an Universal Obstruction happen in the smaller Arteries, so that the Blood in them cannot be derived into the Veins, the Pulse is found to be sensibly very *slow*, for, the Pressure upon the Artery, in this Case, continues for some time, and likewise that upon the Finger: But one in this State must die in a little time. Again the Pulse comes to be remarkably *slow*, when the Blood by reason of its viscosity, runs with difficulty upon the Surfaces of the Arteries, notwithstanding the *Impetus* of the Heart.

Now, the result of all these Differences of the Pulses, and what they *portend* and *Prognosticate* in those Distempers that are acute, is reducible to these few following Observations.

1. A Pulse that's little or inconsiderably alter'd and chang'd from that which is natural, but is only somewhat more *frequent* and *stranger* in the Beginning of a Fever, tell us, that, it is either a Continual one, of one or more days: Or, that the Fever is malignant. To distinguish the one from t'other, we are to consider if the Pulse be equal, and like to a natural one, excepting that it is *swifter* and *stronger*. For, being accompanied with these Circumstances, it denotes the Fever to be of the first sort, and if it be unequal the Second; chiefly for this Reason, that in a Quotidian or Continual Fever, the Motion of the Blood is only a little greater,
and

and its quantity augmented, *i. e.* rarified, and ſo is the Pulse proportionably, with reſpect to time, or the number of its Beats upon the Artery, and preſſion that it makes upon the Finger. For, in ſuch Fevers, the *Texture* and *Craſis* of the Blood is not much altered from its natural State, or conſiderably vitiated; only, its Motion is greater than uſual, which, nevertheless, may be equal to and conſiſtent with its ſelf, and therefore the *Contractions* and *Dilatations* of the Heart and Arteries muſt alſo be equal.

But in *malignant Fevers*, the Blood is loaded with an unequal viſciditiy and fluidity; or, conſiſts of Parts, whereof ſome are ſo tenacious, that, they cannot freely circulate in the Veſſels, eſpecially in the Capillary Veins, in which the Motion is weak and languiſhing; others again are more fluid. But, both the one and t'other ſort, either ſeparated or mixed, in an unequal Proportion muſt Circulate in the Veſſels at different times; ſo that in Malignant Fevers, the tenacious and groſs Humours being thus mixed with the Fluid Parts, may produce the ſame Pulse that's obſerved in thoſe that are in Health, whoſe Blood conſiſts of unequal Fluids. The Blood therefore of thoſe in malignant Fevers being unequally fluid, and in different Parts of the Body, *i. e.* in the Veins and Arteries, and alſo in different Parts of them, 'tis no wonder, that the Pulse is ſometimes *ſwift* and *ſtrong*, and at other times *ſlower* and *weaker* than is uſual, that is, that the Pulse is unequal.

2. A Pulse that's *weak* and *swift*, and by degrees comes to be weaker than usual, and *stronger* after eating, and when the Food is digested, returns to its former State, signifies an *Hætick* Fever. For, after eating, the *Chyle*, raiseth a new Heat in the Blood, and as 'twere inflames it, or quickens the Animal Spirits, and renders them more brisk by the addition of warmer and rarified Blood, which makes the greater dilation of the Arteries, and consequently the stronger Pulse. But, when this little Portion of New Blood comes to be exhausted, the Pulse returns to its former state. Thus it likewise happens in Diseases of the Breast, in which, the *Prognosticks* taken from the Pulse, cannot be affirmed to be certain. For, in those affected with Pulmonary Distempers, nothing departs sooner and more easily from its natural State, than doth the Pulse.

3. An *Intermitting Pulse*, is, for most part fatal, and *Prognosticates* certain Death; yet, in Fevers it is not so dangerous in Children and Old People, as in those of a middle Age. For, in Children the Blood is not yet much refined and attenuated by circulating through the Lungs (which it doth only after the Birth of the *Fœtus*) and consequently is not very equally fluid, and the Animal Spirits being unequally separated from the Blood, the contraction of the Heart, with respect to its self must be unequal, and the Pulse intermitting. And in Old Men, the
Channels

Channels in many Places are sunk and flagged, and their sides fallen together; that 'tis no wonder there should be an obstruction in their Blood, and sometimes an intermitting Pulse. But, it is more dangerous when this intermission of the Pulse is caused by the violence of Diseases, especially by feverish ones, in those of a middle Age, in whom the State of the Animal Spirits, which influence and promote the Contractions of the Heart, is best known by the Pulse; so that if it be strong and equal, there is ground to hope for a recovery of the Patient, notwithstanding the appearance of some ill Symptoms. But, on the contrary; If the Pulse is weak, wavering, and intermitting, tho' all other Symptoms promise fairly, we are always apprehensive of it. For, such a Pulse is commonly the Harbinger of Death.

Could we be allow'd to inquire into the productive Causes of this fatal Symptom, 'twere no hard matter, to bring such as are not only suspected, but certain and undeniable. And these are (to name some of them) a defect, or an Obstruction of the Animal Spirits in the Brain, intercepting their Flux into the Fibres and Nerves of the Heart. For, the Heart being a Muscle it must necessarily be moved by the Concourse of the Blood and Nervous Liquid, and when this is wanting, it can neither be contracted nor dilated, and consequently there can be no Pulsation of the Artery. The same Effect happens upon a Pressure of the Trunk of the Artery adjoining to the *Basis* of the Heart,
by

by an exceſs of Fat or Swelling, and Tumor of the Glands, too much Water in the *Pericardium*, or that which comes from a Dropſy in the Breſt, *Polypus's* which have their Conſtruction from the Fibrous Parts of the Blood, and their *Make* being Oblong and Ramous, numbers of them may happen to be aſſociated in the Heart and other Parts, making Carnuous Concretions, ſo deeply radicated that they grow to a conſiderable bulk, and diſſuſe themſelves all along the *Arteries*, Swellings, Stones, &c. in the Artery, or Auricles of the Heart, a great Fermentation of the Blood within its Ventricleſ, a defect or *Plethera* of the Blood, obſtructions in the pulmonary Vein, great Pains at the Heart, and Paſſions of the Mind, and a great many ſuch like. But, to proceed,

4. A *ſtrong and brandiſhing Pulſe*, accompanied with other good Symptoms, is one of the beſt Signs, for it indicates a free Circulation of the Blood, a flux of the Animal Spirits into the Heart, and a ſeparation of them from the Blood; a ſoundneſs of the Brain and integrity of its Veſſels. For which reaſons alſo, a *weak and empty Pulſe* is always dangerous, ſo are likewise the *quick and ſlow* ones: For, the one tells us that the Blood is either exhausted, or that it ſtagnates in ſome of its Veſſels, or that it is too much diſſolved and rendred too fluxible: And the other, namely, a too *ſlow Pulſe* ſignifies a great *Lentor* or viſciditiy in the Blood, or an obſtruction of its Circulation through

its Channels, neither of which can be without Danger.

But here we are to obſerve, that, a *weak, unequal* and almoſt *imperceptible Pulse* in the *beginning* of a *Fever*, tells us, that it is a continual *Periodical* or *Intermitting* One, chiefly becauſe all continual Periodical Fevers, may be conſider'd as compounded of many intermitting Ones; or, rather becauſe they proceed from an unuſual viſcidty in the Blood. In the beginning of a Paroxiſm, when this Humour invades the ſmall Arteries of the extream Parts, as are thoſe of the Brain, only a ſmall Portion of the Animal Spirits can come from thence, for this reaſon, the Contraſtion of the Heart muſt be the weaker, and the *Pulse* almoſt *imperceptible*: But becauſe there is always ſome ſeparation of thoſe Spirits more or leſs according to the viſcidty of the Blood, therefore, in thoſe Fevers the Contraſtions of the Heart muſt be ſometimes *weak*; ſometimes *quick*, and ſometimes *ſlow*. Of this Nature alſo is the *Pulse* of *Scorbutick* People; eſpecially, when they are affected with a ſort of an intermitting Fever, in the Declination of which their *Pulse* is *weak, ſlow* and *unequal*; in the *Status* of it is *brandiſhing* and *hard*, and ſometimes *quick, weak* and *unequal*, that one would think, the Sick could not live a few Hours; but when the fit is over, the *Pulse* is like that of one in perfect Health.

Laſtly,

Lastly, A *hard Pulse*, signifies a *hardness* in the *Artery*, caused by its thickness, *Tension* or Dryness, if these *Circumstances* be owing to Nature, there is less danger than when the *Tension* proceeds from a Stuffage of Blood, or any other fix'd and hard Matter in the *Artery*. A *hard Pulse* occasioned by want of moisture or dryness of the *Artery*, is a Sign of Heat and Inflammation, and of *Pleurisies* when the *Artery* is much distended, and the vibrations strong tho' there be no other Signs.

But after all, tho' amongst all the Animal Actions, by which we inquire into the State and Strength of the Sick, none is of so much Regard and Concern as that of the Pulse; yet, many of its Signs being only probable, chang'd and alter'd by very slight and sometimes hardly observable Circumstances, we cannot be cautious enough in our Observations or *Prognosticks* concerning them; especially, in acute Distempers, which, many times by false Auguries, expose the Physician to no small Reproach and Contempt. It may not therefore be improper to advert to a few things here subjoin'd, not to invalidate what hath been said concerning the Pulses, but to make us the more Circumspect and Cautious in forming our *Prognosticks* concerning them.

We are not then to think that the Pulses do always and certainly point out to us the State and Condition of the Sick, the Quantity and Quality of their Blood, and the *Impetus* of their Heart, &c. For nothing is more

more obvious than to ſee the natural Pulſe of one Man to be plainly different from that of another: The contraction of the Heart in ſome being more *powerful* and *ſtrong*, in others *ſlow*, and in a third ſort *quick* and *frequent*, and a thouſand the like; not to mention the different Ages, Sex, Conſtitution and the *Sex non-naturalia*, &c. And,

It ſometimes happens, that, there is an extraordinary conformation of the Artery in the Wriſt, to which we moſt commonly apply, when we inquire into the Nature of the Pulſe. Thus, it may be very hard, or be turned from the moſt common and uſual Place, and therefore occaſion no ſmall Alteration in the Pulſe. In ſome, this Artery hath been ſo ſmall, that it could hardly be perceived. In others, it hath been found in the Back of the Hand, between the Thumb and the foremoſt Finger, (and not at all in either of the Wriſts) perceptible, not only to the Finger, but alſo to the Eye. And ſome have had it in the back part of their Thumbs. Again, Some who have loſt much Blood by being wounded in the Arm or Wriſt, ever after have had a more languiſhing Pulſe in that Part, than in the other. And ſome without any Wound or Hemorrhage have had a ſtronger Pulſe in one Wriſt than in the other.

Neither is it improbable, that, *clots* of Blood, *Worms*, or ſome ſuch thing in the Artery, may ſo confound and alter the Pulſe in one Arm, that it may be quite different to that of the other; or, that there may not be

be ſome *impoſſhume*, or diſorder near the axillary Artery, or Lobs of the Lungs, while the Heart is ſound and entire. But that which is moſt obſervable, is, that there may be an intermiſſion of the Pulse, tho' there be no intermiſſion in the Contractions of the Heart. We have ſeen that the Pulſation of the Arteries, is owing to the Contraction of the Heart; yet, it often happens, that, the Heart is found to be Contracted, when there is no *Dilatation* of the Artery, there being little or no Blood thruſt into it from the Heart. So that a quick and ſtrong Pulse; *v. g.* doth not always proceed from the State of the Blood. But ſometimes alſo from an extraordinary irritation of the Heart, manner of its Situation, and other ſuch like Circumſtances, Convulſion of the Arteries, Paſſions of the Mind, exquisite Pains, and a *Plethora* of Blood, &c.

Neither muſt we always have a good Opinion of a *Laudible Pulse*, or, altogether condemn a *weak* and *unequal* one; eſpecially, in the Paroxiſms of exquisite Pains in the Head, and of the Cholick, &c. in which, the Pulse is often very *weak* and ſometimes *intermitting*, tho' a brisker one appears after the Paroxiſm. Therefore in theſe and other like Caſes, nothing that's certain can be known from the Pulse alone, or *predicted* concerning it in this or t'other Patient, unleſs we know what it was in its Natural State, which ſeems to be

be very difficult, as well as impracticable, the Phyſician being obliged to give his Advice to all known and unknown. Beſides that, 'tis a Thouſand to one if ever he inform himſelf of the Strength, Frequency, Equality, Order and Tone of his Patients Pulse, as it was in a natural State, and when he was in Health. Again,

It hath been often obſerved, that, ſome have died when their *Pulſe* hath been indifferently *ſtrong* and *equal*, &c. and that others have recovered under a *Weak* and *Intermitting* one; ſo that, the Signs taken from the Pulſes, even with reſpect to the Strength of the Patient, are ſometimes very uncertain; As in Hiſterick Fits and Faintings, as well as in Fevers, in which, ſome have been carried off, whoſe Pulse hath been little or no ways different from that of one in perfect Health.

For theſe and many other Reaſons that could be added, are the Pulſes to be conſidered with the greateſt Attention, Caution and Deliberation, not only with reſpect to the Strength of the Patient, but alſo to all the Appearances of his Diſtemper, as all the Differences of the Pulſes are conſider'd with reſpect to one another. 'Tis not enough to apply ones Finger to the Artery, as ſome do while their Thoughts are intent upon ſomething elſe; or, to enquire into the Nature of ones Pulse, when he is not free from all Paſſion of the Mind, and
Mo-

Motion of the Body. Left the Alteration that may be made upon it, be aſcribed to the Diſeaſe. Neither is it proper or commendable to feel ones Pulse at the firſt approach. For it often happens, that not only Women and Children, but others alſo, have ſome Commotion in their Minds, more or leſs, at the approach of the Phyſician, whoſe Prudence and Conduct ſhould lead him to conſider the Nature and State of his Patients Pulse, not only in both Arms, but alſo at different times.

C H A P. VI.

Of Prognosticks taken from the Urine.

THE circulating Blood, being the great Spring of the Animal Machine, and the active Principle, by which all its Actions and Motions are exerted, it must therefore be of a certain and determin'd *Craſis*, limited Quantity, Motion, Proportion, and diversity of its Component and Constituent Parts. And no less necessary is it, that it be continually supplied, by reason of the constant Expence and Consumption of it in Animal Motions. Besides, that its Nature and Constitution implies a necessity of Dissolution, and if it be not daily repair'd, it would soon become vapid and unactive, and our Bodies should soon lose their Form and Figure, and die at last, when the Vessels and Liquors in them, is spent and exhausted. For, if according to *Sanctorius*, we perspire Fifty Ounces in the space of Twenty four Hours, how soon would the Stock be quite spent, without daily reinforcement? or, regaining as much perspirable Matter, *i. e.* the Produce of the third Concoction of our Food and Nourishment, which is separated and diffus'd from our Bodies by the *Viscera* and Cutaneous Glands into imperceptible *Eſſuvia*.

F

This

This daily reparation of our Blood is owing to the Food and Nourishment we take into our Mouths, where 'tis broken by the Teeth and moisten'd by the Spittle, and thus descends into the Stomach, where 'tis bruised into a Cream or Pulse, which we call *Chyle*, and in this State is thrust into the Intestines, by the muscular Force of the Stomach, and at last (not to trace it further) by a wonderful Artifice and Contrivance, into the right Ventricle of the Heart, where it begins to be chang'd into Blood.

But, for this purpose, our Drink is equally necessary with the solid part of our Food, that the gross and unactive *Chyle* should be rendred the more fluid to be admitted into the Veins and *Vasa minima* and continued in Circulation for the Nutrition of the Parts. Now when these Ends are accomplished, the remaining part, being unnecessary and useless, is separated from the Mass of Blood in the Reins, convey'd into the Ureters, and voided by the *Urethra*. Not by an imaginary Fermentation, or a pretended Magnetic Vertue and Attraction in the Glandular Reins, but more probably, and consistent with the Animal Oeconomy and Laws of Mechanism, by the impulsive Motion of the Blood through the Emulgent Arteries. For, by this impetuous Motion, its Parts are divided and separated, especially, those more Liquid ones of the *Serum*, which are driven into the Pores of the Glands of the Reins, from whence they are distilled and ouzed in-

to the *Pelvis*, and thence into the *Ureters* and *Bladder*.

But, be it as it will, This is the *Serum* or *Urine*, the *inſpection* of which is ſo uſual, in order to know the State of the Sick, the Nature of Diſeaſes, how long they will continue, and what will be the *Event* and *Issue* of them.

But, for as much as this Matter implies a neceſſity of inquiring into the *natural State* of *Urine*; or, what it naturally ought to be in its *Subſtance*, *Quantity* and *Quality*; we are therefore ſhortly to obſerve, that, by the firſt is to be underſtood a certain Conſiſtence in the *Urine*, that it may be almoſt as fluxible as Common-Water, only with this difference, that it is more or leſs ſuch, as it is loaded with more ſolid and groſs Parts, which, only after excretion are diſcovered in the *Contents*, either upon its *Surface*, in the *middle*, or at the *bottom*. And the laſt of theſe, called *Sediment*, ſhould be of a *whitiſh Colour*, *Light* and *Equal*, of an indifferent *Quantity* and without *Smell*. Of the ſame Nature alſo are the other ſorts of *Contents*, namely the *Nubecula* and *Eneoremata*. For, theſe likewise are *Sediment*, only they conſiſt of finer Parts.

Now, tho' all theſe are natural, and commonly obſerved in the *Urine* of thoſe in a State of Health; Yet, they are vaſtly different with reſpect to the *Sex*, *Age*, *Conſtitution*, and *Season* of the Year, &c. Thus the *Urine* of thoſe of a *hot Conſtitution* is *thin*, of a *ſmall Quantity*, and *high Colour*.

And quite otherways with thoſe whoſe *Conſtitution* is Cold. The *Urine* of *Women*, is not of ſo high a *Colour* as that of *Men*. But, 'tis loaded with *groſſer Sediment*. In hot *Climates*, the *Urine* is thinner and higher Coloured and hath leſs *Sediment*, than in the Colder *Regions*. The ſame difference is to be obſerved in *Summer* and *Winter*. Nay, it is altered and changed every *Hour*, according to the *Heat* and *Cold*, *Reſt* and *Labour*, *Anger* and *Sadneſs*, the *Nature* of the *Food*, before and after *Child-bearing*, *Faſting* and *Eating*, *Watching* and *Sleeping*, and a *Thouſand* the like.

But its *Nature*, and the *Principles* whereof it *Conſiſts*, is beſt known by its *Analysis* either *Chymical*, or, by the more vulgar *Experiments* made upon it by *Evaporation*. For, we find that its ſolid *Parts* are *Salt* and *Earth*, or a *Duſty Sediment*. And if it be dried upon a *Glaſs* or any transparent *Object*; we ſee by the *Microſcope*, that, this *Salt* repreſents the *Figures*, of *Vitriolick*, *Alumenous*, *Tartarous*, *Nitrous* and *Common Salt*. Which, when it is mixed with the watry *Part* of the *Urine*, takes place at the bottom, or, ſwims in the middle, and its fineſt *Parts* appear near to or upon its *Surface*, according to their *Gravity*, a little time after it is voided, and hath loſt the *Motion* or *Impetus* it received from the *Blood* in its *Circuit*.

Hence it is, that we cannot know what are the *Contents* of *Urine*, or make any juſt obſervations upon't; unleſs the *Veſſel* or *Urinal* be kept without *Motion* for ſome time,
and

and alſo from Heat, *i. e.* A Heat which is greater than that in Summer, and from too great Cold, or that which is greater than in Summer Nights. For, an *Exceſſive Heat*, promotes the confus'd Motion of the *Salts* and *Earth*, and *Cold* ſuddenly congeals them, before they can either be Precipitated or Separated, ſo that the *Urine* muſt be always muddy and troubled.

Again, the *Colour* of *Urine*, is altogether owing to the *Proportion* of *Salt* and *Earth*, or *Tartar* mix'd with its *Aqueous* Part, ſo that, if there be little or nothing of thoſe in the *Urine*, its *Colour* muſt be like that of *Water*, and when there is ſome conſiderable quantity of them, eſpecially of *Earth* and *Tartar*, which is an *Opacous* Body, the *Urine* muſt be the darker and more blackiſh, and where there is only a ſmall Quantity of it, and a due proportion of *Salt* and *Water*, it muſt be like that of one in Health, *i. e.* not altogether Watry, but of a *Yellowiſh* or *Citron Colour*. But, tho' the *Colour* of *Urine*, be chiefly owing to an Alteration of its Conſtituent Parts; yet we muſt carefully obſerve, that, it is ſometimes occaſioned by the Addition and mixture of Corrupted and Purulent Matter, Blood, and the like, which, not only alters the *Colour* of the *Urine*, but alſo that of the *Sediment*; eſpecially, when it reſembles *Scales*, *Bran*, *Meal*, and ſuch like. For, ſuch *Appearances* in the *Sediment*, proceed from viſcous and purulent Humours, which intangle and thicken the

Solid Parts of the *Urine*. Hence likewise are the *Hairs*, and *Caruncula*, and *Membranous Sediment*, which must be aſcribed to the Disorders of the Reins, Ureters, or Bladder. And, in one word, whatever circulates with the Blood, ouzes or is ſeparated from it, when the Veſſels are broken or diſtended, as are *Bile*, *Sand*, *Stones*, *Worms*, and ſometimes the *Blood* it ſelf, not only alters the *Colour*, but alſo the *Sediment* of the *Urine*.

This being the *Nature* of *Urine*, 'tis no hard Matter to conceive, how many and different ways, it may be chang'd and altered from its natural State, either by the Organs of Secretion, when they are vitiated; or, when there is not a due Velocity in the Blood and Cohesion of its Parts; or when the Conſtituent Parts of the *Urine* are not broke off, and mix'd with the Blood to be ſeparated from it, in one or all of theſe Caſes the *Urine* muſt become unnatural, *i. e.* defective or exceſſive in its *Quantity*, *Quality*, and *Subſtance*. Now the firſt of theſe, being ſometimes greater, ſometimes leſs, and ſometimes equal to our Drink, and therefore ſo undetermined, that nothing certain can be affirmed concerning it. It will therefore be more for our purpoſe, only to conſider ſome of the *Appearances* in *Urine*, and what they *Prognosticate* with reſpect to the two Laſt, namely its *Subſtance* and *Quality*.

Fiſt then, *Urine* is ſometimes too *thin* and *watry*, which, by what hath been ſaid, is owing to a leſſer Quantity of *Salts* and *Earth*

Earth than is uſual or natural, either becauſe the Particles of thoſe Solid Parts, are too groſs to be rendred fluxible and ſeparated in the Reins : Or, becauſe they are not broke off from the Parts of the Body and mix'd with the Blood : But, be it as it will, this *thin watry and clear Urine*, in *Fevers*, *Prognoficate* imminent or approaching *Pains* in the *extream Parts*, eſpecially in the *Head*, and tells us that the *Fever* is not an *Ephemera*, in which the Secretions are little altered or vitiated, and therefore is the more dangerous, becauſe the groſs Humours come not into the *Reins*, in that quantity that's neceſſary to take off the Diſtemper, but is obſtructed in the *Extream Parts* or *Capillary Veſſels*, where the *Impetus* of the circulating Blood is weakeſt, and at the greateſt diſtance from the Heart.

But this is to be underſtood only with reſpect to this *thin Urine* in the *beginning* of the *Fever* ; For, if it continue clear, thin, and Watry for ſome time, the *Symptom* is yet more dangerous, chiefly, becauſe it denotes a Stagnation in the *Capillary Veſſels* of the *Brain*, (where the Motion of the Blood is weak and unactive, of little Power and Force, and eaſily obſtructed) in which when theſe *Humours* or *Salts* are once fixed, not only the *Urine*, that ſhould have been loaded and impregnate with them, becomes *thin and clear*, but alſo thoſe finer *Veſſels* of the *Brain*, muſt be diſtended and over-ſtretcht, cauſing violent and intolerable *Pains*, and at laſt an *Inflammation*, *Delirium* and *Frenzie*,

in which Diſtempers the *Urine* is for the moſt part *thin* and *watry* and without *Sediment*.

This ſort of *Urine* is likewise commonly obſerved to come upon violent Commotions and Perturbations of the *Mind*, and doth not retrieve its natural Colour, till the Paſſion is quite gone off. And there is no Sign more certain of an imminent *Hysterick Fit*, than when from a *Yellowiſh*, the *Urine* turns to a *watry thin Colour*. It is likewise a fore-runner to *Convulſive Paroxiſms*, and in *Spasmodick* Caſes, the *Urine* is almoſt always *thin*, *clear*, and *plentiſul*; ſo that it ſeems that thoſe Diſeaſes are either produced or fed by the *Salts* of the *Urine*. But, it is yet a more dangerous Sign, if about the beginning or *Status* of a Diſeaſe, the *Urine* being *rediſh*, and much loaded with *Salt* and *Excrementitious Contents*, changes gradually to a *Pale* and *thin Colour*, and if the *Pulſe* become *quicker*, *weak* and almoſt *wavering*, if the *Tendons* Start, if talkativenesſs, fearful Dreams, and ſuch other Symptoms appear.

Moreover, *thin* and *clear Urine*, continuing to be ſuch throughout the whole Courſe of Chronical Diſtempers, is always ſuſpected and dangerous. Becauſe, as was formerly obſerved, the Matter and Humours where-with the watry Part ſhould have been impregnated, is, after a long Diſtemper impacted and detained in the Body, that it can neither be concocted or thrown out. But, if the *Urine* is only ſometimes *thin*, and at other

other times loaded with *Sediment*, and again becomes *clear* and *Transparent*, and always inconfiſtent with it ſelf, it not only *Præſages* a lengthning of the *Disease*, but alſo *Death* to the Patient, eſpecially in *Fevers*, if this tedious and ſlow *Concoction*, and ſeparation of the *Humours*, happen upon *Critical days*, in which *Nature* ſhould be moſt vigorous, and make its laſt effort to throw them out.

Secondly, *Groſs* and *thick Urine* being ſuch by reaſon of its *Contents* or *Solid Parts*, that is, the *Salt*, and *Tartar*, or *Earth* mix'd with it, is quite different from the former. For, it tells us that the *Peccant* and *Crude Humours*, are more or leſs diſſolved, or fixed in the *Capillary* and other *Veſſels*, or rendred *flexible* with the *Blood*, and ſeparated in the *Reins*, in proportion to the *Quantity* of the *Liquid* and *Solid Parts* or *Contents* of the *Urine* and *difference* of its *Colour*. For, the more that the *Urine* is impregnate with *Humours*, *Salt*, or *Tartarous Earth*, ſo much leſs in *Quantity* is the *Liquid Part* and of a darker *Colour*, and *è Contra*. But, tho' the State of the *Blood* and Condition of the *Sick*, is pointed out by the *Contents* of the *Urine*; Yet, it is chiefly to be conſidered and examined with reſpect to the ſudden or ſlow *Changes* and *Alterations* that are made in it, ſometime after it is voided. Thus,

Hippocrates (a) obſerved, that *Urine* be- (a) Aph.
ing *clear* and *thin* when firſt voided, and 81. § 4.
forthwith becomes *muddy* and *troubled*, ſigni-
fied

fied an approaching Concoction, or that it was already begun. But, if it was piffed *muddy*, and continued to be fuch, like *Horse-piff*, it fignified a rarefaction of the Humours, and *Prognosticated* approaching Pains of the Head. 'Tis true, this laft fort of Urine, indicates a great Agitation and Ferment in the Component Parts of the Humours, and a partial Coction of them, and in fo far there is no better Sign. But, feeing we dont know what the nature of this Concoction is (for, fuch may happen at any time of the Difafe) or how long it will continue, *Predictions* concerning it, muft be the lefs certain, unlefs fome Light be had from the other Symptoms of the Diftemper. And that this *Subjugal Urine* fhould denote fome approaching diforder in the Head, feems to be unaccountable, tho' the truth of the Obfervation, hath been fometimes confirmed, efpecially, when at the fame time the *Pulse* is *low* and *weak*, and the Patient is *leepy*, and affected with a *heavinefs* in the Head. For, in this Cafe, a *Lethargy* is not far off. But, on the other hand, if he is reftlefs and inclines to waking, is thirfty and his Tongue parched, it foretells a *Delirium* or *Convulfions*.

Thirdly, A *Light white* and *equal* Sediment, hath always been obferved to fignifie a perfect Coction of the Humours. But, if this *Sediment* appears in the beginning of a *Fever*, it tells us that it muft be an *Ephemera*, or a *malignant one*. For, in the firft, neither the Mafs of Blood, nor Secretions
are

are much vitiated, and therefore the *Urine* muſt be like that of one in Health, whoſe *Sediment* is *light* and *equal*, becauſe the Blood circulates equally, *i. e.* its Motion is ſtill the ſame, and it being likewise ſuch in *Malignant Fevers*, the *Urine* as well as the *Pulſe* of thoſe in that Diſtemper, muſt be like that of thoſe in Health.

Fourthly, *Rediſh* or *Flame-coloured Urine*, having a *red* and *light Sediment*, in the beginning of a *Fever*, is a Sign of an approaching *Criſis*; eſpecially, if the *Fever* be continual. For, ſuch *Sediment* muſt proceed from much ſeparated *Salt* and *Earth* (ſuppoſing always that the *Urine* is Plentiful and Copious) which neceſſarily takes off the *Lentor* or febrile Matter of the *Fever*. But, if there be any Signs of an *Intermitting* one, and the *Sediment* reſembles *brick duſt*; Inſtead of a Perſect *Criſis*, there is only a partial one, *i. e.* a true *Paroxiſm* of an *Intermitting Fever*, for ſuch is the *Sediment* of thoſe in that Diſtemper. Add to this, that *Rediſh Urine*, having a *Light Sediment*, is, one of the beſt Signs in *Pleurifies*. For, the *Colour* indicates a due mixture of the *Liquid* and *Solid Parts* of the *Urine*, and the *Light Sediment* a laudable Separation, both which fairly promiſe a ſpeedy Recovery, and an End of the Diſtemper. And the ſame is to be ſaid of *Greeniſh* or *Yellow Urine*, having a *white Sediment*, for, ſuch *Colours* come neareſt to that which is *natural*.

But,

But, whatever is ſignified by the *Sediment*, either *White* or *Red* that falls to the bottom, the ſame, but with leſs Certainty is ſignified by the *Nubecula*, which are only a *Lighter Sediment*, and according to the *Gravity* of its Parts, takes place in the *Middle*, or near the *Surface* of the *Urine*. The Appearance of thoſe *Nubecula* is a certain Sign of a partial Concoction of the groſſer Parts, *i. e.* that Concoction or diſſolution of the Humours is commenced. For Clouds in the *Urine* commonly appear before the *Hypoſtaſis* or *Sediment*, which requires more turns of Circulation in the Blood to a perfect and accompliſh'd Separation. However, 'tis plain, that, the nearer the *Nebecula* or Clouds approach to the bottom, ſo much the nearer they come to be *Sediment*, which is nothing but a *Nubecula* plac'd at the *bottom*. And if this lighter *Sediment* appear upon thoſe called *Critical* days, in which commonly there happens a notable contraction of the Fibres and Capillary Veſſels, there is no more certain Sign of a Solution of the Diſeaſe. But, when this or any ſort of the Contents come to be Interrupted, ſo that ſometimes there is an Appearance of *Sediment*, of the *Eneoremata* or *Nubecula*, and ſometimes none at all, it threatens a *Lengthning* of the Diſeaſe, the Humours being unequally concocted, or collected in different Parts of the Body, and therefore unequally ſeparated.

Fifthly, *Piſſing of Blood*, (than which no appearance of *Urine* in whatever diſtemper, is more dreaded, every one being affrighted to look upon this *Liquor* out of its Channels) muſt be carefully conſider'd in all its Circumſtances. For, ſometimes it proceeds from a flaggineſs or weakneſs of the Capillary Veins and Arteries of the *Ureters*, *Bladder*, and *Urethra*, accompanied only with a wearineſs of thoſe Parts without any *Fever*: And in this Caſe, portends no great Danger, providing there be ſome *Intermiſſion*, and the Parts recover their Tone and Vigour. But, if it continue a long time, tho' there be ſome *intermiſſion*, it threatens no ſmall danger, becauſe a *Rupture* of thoſe Veſſels, is juſtly ſuſpected, eſpecially, when this voiding of Blood happens in *Fevers*, and is accompanied with *Pains*. For this reaſon likewise, *Bloody Urine* muſt be a fatal Symptom in the *Small Pox*, in which Diſtemper it often happens, eſpecially to Young People, and thoſe in the Flower of their Age. For, the Blood ſometimes rages ſo violently, and is ſo mightily inflam'd; eſpecially, if they have been accuſtomed to Spirituous Liquors; that it breaks its Channels, falls into the *Bladder*, and is evacuated by the *Urinary Paſſages*.

Sixthly, The *blackiſh Colour* in *Urine* having alſo a *black Sediment*, is a fatal and Pernicious Sign; for it muſt proceed from a Predominancy of the *Solid Parts*, eſpecially
of

of the *Earth* and *Tartar*, the *ſerous* Part being either exhausted or detained in ſome part of the Body ; and when the *Urine* is very much loaded with this *Sediment*, it denotes a Corruption or an irreparable *Relaxation* of all the Parts ; and in *intermitting Fevers*, when the *Nubeculae* are of a *blackiſh Colour*, it threatens a *Quartan Ague*, or an *Erratick Ague*. And reducible to this is the appearance of *Oyl* incorporated with, or appearing upon the *Surface* of the *Urine*, in thin Membranes and Cobwebs, which always ſignifies a melting of the fatter Parts.

Laſtly, A *Suppreſſion* of *Urine*, when it proceeds from a *Convulſion* of the *Sphincter* of the Bladder, or the like, always threatens a *Strangury* ; but if it be owing to the *Ileon Inteftine*, the caſe is more dangerous, and mortal : For when this Gut preſſes upon the *Ureters* or Bladder, and adjacent Parts, the *Serum* cannot be ſeparated from the Blood, or voided by the *Urethra*. Of this nature likewiſe is the *Suppreſſion* of *Urine* that's occaſioned by an exceſſive *Cold*, whereby the Blood is ſo much coagulated, or the *Sphincter* ſo long contracted, that there can be no Separation made of the *Urine*. Neither can that be leſs dangerous, which comes upon a *ſucceſſion* of *Heat* and *Cold* in the Loins, and accompany'd or follow'd by *Sweat*. For, this Diſtemper muſt proceed from ſome Diſorder in or near to the *Reins*, as by viſcous and mucous Matter, Sand, Stones, and the like, obſtructing the Paſſage of the *Urine*, and there

thereupon ſometimes a *Shivering*, and then a burning *Heat* muſt inſue, according to the *Flux* of the Blood into thoſe Parts. And if *Sweat* (which is nothing but the *ſerous* part of the Blood mix'd with the finer parts of *Salt* and *Earth* and caſt out by the Cutaneous Glands) break out upon this *Suppreſſion* of the *Urine*, the Danger muſt ſtill be the greater, becauſe the *Serum*, that's remaining, becomes the more glutenous, thicken'd and leſs fluxible, cauſing intollerable *Pains*, which are follow'd by *Death*.

Now, tho' theſe few Particulars, if duly conſider'd, may, I think, account for the *Nature* of *Urine* and all its *Appearances* and the *Prognosticks* made concerning it; yet there is no leſs *Caution* to be obſerv'd with reſpect to *Predictions* taken from *Urine*, than was above-mention'd concerning the *Pulſes*. 'Tis commonly ſaid, that of all others the *Inſpection* of *Urine* gives the moſt certain *Signs* to the Phyſician, upon which he may eſta- bliſh his *Prognosticks*, with reſpect to the *preſent* Circumſtances of his Patient's Diſtemper, and the *Event* of it. Thus the Divine *Hippocrates*, (a) *Qui vero ſuperſutu-*
ros ex morbo, & morituros, eoſque quibus
pluribus diebus, & paucioribus perſeverabit
morbis, rectè prænoſcere volet, is intelligen-
tia comprehenſam omnium ſignorum doctrinam,
æſtimare debet, & eorum vires inter ſe colla-
tas ratione expendere, velut ſcriptum eſt,
eum in aliis, tum in urinis, & ſputis, ubi
una & pus & bilis tuffi rejecta fuerint. He
that would form juſt *Predictions* concerning
the

(a) *Præn.*
p. 46.

(a) Vide
Forest. de
incerto ac
fallaci uri-
narum ju-
dicio.

the Death or Recovery of his Patient, or how long his Distemper will continue, must have an exact knowledge of all its *Symptoms* and *Signs*, especially those of the *Urine*, &c. that they may be compared with one another. Nevertheless there are some, (a) who pretending to be less credulous, or, as they call it, superstitious than others, not only condemn and slight all *Auguries* taken from *Urine* in their daily Practice, but likewise tell us, that there is more uncertainty than Truth in the Observations that are commonly made upon't; and that *Inspection* of *Urine*, tho' consider'd with other *Signs* and *Appearances*, afford nothing that's certain, *i. e.* that all Observations concerning this Excrement may sometimes be probable, but seldom demonstrative, and in one word, that are meer Conjectures. And,

On the other hand, there are a sort of Men, whose base Avarice and cunning Impudence, for a small matter, will impose upon the simple Vulgar, pretending to know the Nature of the Distemper, the Cause and Occasion of it, as well as its *Issue* and *Event*. Nay, they will discover the Sex, Age and Impregnation, and what Member is affected, and tell you where the sick Person lives, and that he was hurt by his Ox or Plough, or had fallen from his Horse; and tho' supinely ignorant of the *Medical Art*, will divine what has and what will happen, prescribe Remedies, and fairly promise to cure incurable Diseases by *Inspection* into their *Urine*, at any Time or Distance, which an honest and ingenious

ingenious Man will never pretend to, being convinc'd that all this requires an exact knowledge of the *natural* and *habitual* Urine of his Patient, without which 'tis no easy matter to know that which is *præternatural*, eſpecially at a diſtance, and after it hath undergone a thouſand Changes and Alterations. Beſides, that all in the ſame Diſtemper void not the ſame ſort of Urine, by reaſon of their different Diet and Conſtitution, &c. the Urine being, as was above obſerved, vaſtly different, even in a State of Health. Add to this, that the different Conditions of Urine, whether complex or ſeparate, are common to many Diſeaſes, which are, if not contrary, yet moſt unlike to one another, and owing to different Cauſes. Thus a *groſs, thick, and high-colour'd* Urine is voided by thoſe in a *Fever*, as well as by thoſe that are *ſcorbutick*, or affected with an *Aſcites*, &c. The Urine of thoſe that are affected with *melancholy* Diſorders, *Worms*, *bad* *Digeſtion*, and *Nephretick* *Colicks*, is *pale* and *thin*; and the ſame *clear* and *watery* Urine preſages a *Delirium* and *Death* to thoſe in *Fevers*, but no ſuch thing or danger to thoſe that are affected with the juſt mention'd diſtempers. And 'tis to be obſerv'd, that the Urine of thoſe in *Fevers* is inconſiſtent with it ſelf, and varies more or leſs, not always according to its proper *Genius* and *Nature*, and in proportion to its Cauſe, but ſometimes, according to the *Conformation* of the *Reins* and other Organs of

Secretion and different State of the Blood.

For theſe and many other Reaſons which might be adduc'd, it may be affirm'd, that *Predictions* and *Auguries* taken from the *Urine*, unleſs it be conſider'd with the greateſt care and circumſpection, may be uncertain and precarious, not only in *peſtilential*, but leſs *malignant Fevers*, and even in thoſe that are *intermitting*, in *Pleurifies*, *Quinſies*, and other internal *Inflammations*, in which Diſtempers the *Signs* of Death, and Recovery, taken from the *Urine*, have been found to be falſe and ill grounded. Again, the ſame *Urine* has given occaſion to *prognoficate* both *Life* and *Death*. Thus in *Dropſies* and *pulmonary Diſtempers*, the *Urine* has reſembled that of one in health, while the Patients have been cut off and ſuffocated in an inſtant, So that a bare *Inſpection* of *Urine*, even in the *preſence* of the *Sick*, without comparing and conſidering all the other Symptoms of his Diſtemper, will prove a weak Foundation to raiſe *Predictions* upon. For,

Tho' the *Appearances* of *Urine*, as we have ſeen, points at the State of the Blood, and Organs of Separation and Diſteſtion, eſpecially in *Feveriſh* Diſtempers, with more certainty than any other *Signs*; nay, moſt part of other Diſeaſes, whether *Acute* or *Chronical*, and their Changes and Alterations, *i. e.* the Crudity and Concoction of the Morbiſick Matter, the Increate and

and Decrease, or Exacerbations and Mitigations of the Disease and *Event* of it, may be known by the *Urine*, and therefore the *Inspection* of it is come to be so usual and customary. But no less regard is to be had to the other Symptoms at the same time, that they be compar'd with one another, especially in the morning or at night after the first accomplish'd Digestion, and when all the Blood has frequently circulated through the *Emulcents*, which it must do in seven or eight hours, being always assured, that the *Urine* is neither alter'd by *Food* or *Medicines*, the *Urinal* or the *Air*; all which make their specifical Alterations in this *Excrement*, especially the last, which, as was already observ'd, *congeals* it when it is too *cold*, and *attenuates* it when it is too *hot*.

Neither is *Urine* to be *inspected* immediately after it is voided, for then it discovers nothing almost but its *Colour*, so that some time is necessary, that its contents may be separated and distributed to their proper Places, according to the *Diversity* and *Gravity* of their Parts, after the Motion that was impress'd upon them by that of the Blood, is taken off. And when it is too *old*, or long kept, its natural State and *Texture* may be alter'd by a supervening Putrefaction, which renders the Observations that are made upon't to be false and uncertain.

And lastly, some regard is to be had to the Changes and Alterations made upon *Urine* by

Drink and Medicines. For thoſe that are made with *Rhubarb*, *Saffron*, *Worm-ſeed*, in *Cider* and *Wine*, dy the *Urine* with a red Colour, as on the other hand, Small Drink, drunk plentifully with any Acid, delutes and renders it *limpid* beyond expectation. (a) Cent. 5. And *Bartholinus* (a) obſerv'd, that *Urine* was Hiſt. 9c. made black by a liberal eating of Berries, as 'tis tinged with a bloody Colour by eating the *Ficus Indica*; and the Effects of *Aſparagus* and *Turpentine* are well known.

 8
 C H A P. VII.

*Of Prognosticks taken from Immoderate
Watching and Sleep.*

WAKING and SLEEPING are both necessary in their turns to the Preservation of Humane Life. When those are changed and altered from their natural Order, and exceed their just Limits, by whatever influence, they either become the Cause of Diseases, or are numbred amongst their most dangerous Symptoms. **Watching* is a time of Action, by which the Liquor in the Nerves, tho' often supplied from the Stock and Mass of Blood in the Veins, is diminished and exhausted. For, there can be no Action without Motion, nor Motion without wearing and impairing the *Springs* and *Organs*. This is notorious in natural *Waking* and *Watching*, but much more so when it comes to be Unnatural and *Immoderate*, as it often happens in some Distempers, in which, tho' the Limbs and Muscles are quiet and at rest; yet, there is a continual *Flux* and *Reflux* of the Animal Spirits in the little Organs and *Tubuli* of the Brain, or are for most part determined that way, if they are not altogether, or much obstructed in their Motion. 'Tis true, that *Lunatics* will wake a long and incredible time, without any remarkable ex-

Expende of the Animal Liquid, tho' they don't either Eat or Sleep by which it may be repaired. But this may be owing to the Extream dryness both of the Liquid and Solid Parts of their Body, that are become so fixed, that there can be no *Perspiration*, and consequently the less Consumption of the Animal Spirits, or need of Nourishment and Sleep. Which,

On the other Hand, is a Cessation or rest from all Action, or a voluntary *Contraction* of the *Muscles*: The Fibres being relaxed and unbended, and the several Members reduc'd to a quiet *Position* and *Æquilibrium* and freed from the Pain and uneasiness of Labour and Action. And so is the *Mind* from its intense Thoughts, Study, Anxiety, Cares and the like, in which, it is employ'd while we are *awake*. In one word, 'tis by Sleep that Nutrition, Concoction and Inseparable Perspiration is promoted, and the *Animal Spirits*, those refined and *Active Particles*, and *little Springs*, so necessary to the Constitution of the *Animal Oeconomy*, are repaired and recruited, and stock'd up for the Future Actions and Duties of the *Animal Life*. But to return to,

Waking, which, when it is *Natural* and *Moderate*, quickens the Senses, and renders them Brisk and Fresh, Distributes the Heat of the Body equally into all the Parts, perfects the Concoctions, and promotes the Evacuation of Excrements. But, when it comes to be *immoderate*, it brings a Thousand Disorders both upon *Body* and *Mind*.

The

The reaſon of which is plain, if we conſider, that when there is an exceſſive or greater *Heat* in the *Blood* than is uſual, it muſt become the *drier* by continual *Perspiration*; and thereupon the *Nerves* and ſolid *Parts*, (which by a conſtant ſupply of *Moifture* from the *Blood*, are kept in a due and natural State) muſt alſo be the more contracted, dry and leſs vigorous, to actuate and ſtimulate the *Muſcles* and other *Parts*, the *Brain* only excepted, where the *Extremities* of the *Nerves* and *Fibres* are moſt implicated and twiſted, and the *Liquor* in them when in too great quantity, moſt active and irregular in its Motion, and therefore directly contrary to *Sleep*.

Now, as to the reſult of this *Symptom* in *Fevers* and acute *Diſtempers*, *Hippocrates's* (a) and every ones Reaſon plainly ſuggeſts, (a) Aph. that the *Conſequences* of it muſt be fatal. 3. § 2.

For, as was already obſerved, *Immoderate Watching* exhauſts the *Spirits* and dries up the *Humidity* of the *Blood* and *Brain*; Generates *Bile*, and inflames it, and when the *Liquor* of the *Nerves* is much waſted and conſumed; or, ſuppoſing it to be only obſtructed in the *Brain*, that it cannot actuate the *Heart*, the *Pulſe* muſt become weak and low, and the *Fibres* and *Capillary Veſſels* of the *Brain*, after a long diſtenſion in *Watching*, rendered irreparably relax'd.

But, notwithstanding, *Continual* and *Immoderate Watching*, has been accounted a good *Sign*, providing that it happen at the increaſe and height of the *Disease*, and accompanied with *Signs* of *Concoction*; or, when the

Distemper tends to a *Criſis*. At this rate, were the Antient Phyſicians wont to clog their Predictions with Conditions, *Criſis*'s, Concoctions and *Critical Days*, which, after all, were but *Conjectural* and *uncertain*, rendring them ſecure and idle Spectators of the *Event* of the Diſtemper, to the irreparable detriment of the Patient. But we need no more to convince us of the Danger of this *Symptom*, than to obſerve that it is commonly accompanied with *Raving*, a *Delirium*, *Convulſions*, and *Anxieties*, and the like, than which there are no more fatal Signs of *Approaching Death*.

We have ſeen the Advantages of *Natural Sleep* that's brought upon the Body after Working, Labour, and Animal Motions, tho' thereby the Organs are dryed up, and the Animal Spirits exhausted and conſumed. But it is ſometimes alſo cauſed by the preſſure of a full Stomach upon the deſcending *Trunk* of the *Aorta*; by which, the Veſſels of the *Brain* muſt likewiſe be ſwelled, or, embouldned; or, as ſome think by the Acceſſion of new *Chyle*. However it be, 'tis not unlikely that *Immoderate Sleep* is owing only to a greater fulneſs of thoſe Veſſels, or to a Diſtention of the *Tubuli*, through which the *Nervous Liquor* runs into the Parts; or, is produc'd in the ſame manner as that which is *natural*, only in a more eminent Degree, and by a more powerful Cauſe.

Sleep is commonly aſcribed to a *Humidity* and *Coldneſs* of the *Brain*, by which the Nerves are relax'd and become flaggy, and the

the Liquor of them render'd unactive and in-
fluxible. But, in ſome Diſtempers there is
a reſemblance of *Sleep* cauſed by Glutenous
and viſcid Humours in the Blood, obſtructing
the Channels of the *Brain*; eſpecially, the
Glandules in which the Animal Spirits are ſe-
parated from the Blood, ſo that there is no
flux of that Liquor into the Nerves, and con-
ſequently no *Senſe* or *Motion*. And tho' in
this Caſe there happen a *Tremor* or Concuſ-
ſion in ſome Part of the Body; yet, this can
be nothing but an *unequal Flux* of the Liquid,
of the Nerves and Blood into the Fibres of
this or t'other *Muscle*.

What's *portended* by this unnatural and
Immoderate Sleep is very obvious, if we duly
conſider whether it is owing to a *Leſion* of
the Blood juſt now mentioned, or to too
great humidity of the Brain, in both which
Caſes, there is Hopes of Recovery. For the
Exceſſive humidity that intangles the Animal
Spirits, and the viſcous Humours in the
Blood that obſtructs its Motion, may be hap-
pily taken off by Nature or Art. But, if *im-
moderate Sleep* come after long and *immode-
rate watching*, accompanied with a *Deliri-
um*, an irreparable relaxation and unbinding
of all the Nerves and Fibres is juſtly ſuſpe-
cted. *Hippocrates* (a) condemns that Sleep (a) Aph.
that rather *exasperates* than mitigates the I. § 2.
Disease, but commends that which takes
off a *Delirium*. (b) The ſame may be ſaid (b) Aph.
of that which mitigates Pains, Inflammations, 2. 16.
and Fevers, and is well diſtinguiſh'd from a
dangerous and *fatal Sleep*, by being ſound
and

and undiſturb'd, and if it continues ſome conſiderable time, without being interrupted by ſtarting and frightful Dreams of the Dead, of Tombs and Sepulchres, and of their own Death, which ſometimes they foretel. 'Tis likewise an ill *Sign*, when the Eye-Lids being ſet together, the white of the Eye appears, is Pale, Languiſhing and Stupid, if the Patient has not been accuſtomed to Sleep after that manner. And when the Sleep is ſhort and ſoon broke off, the Patient awakes, is *Delirious*, and again *falls a ſleep*. And if he does not ſleep, but lies ſtill without any Complaint, ſpeaks not but when a Queſtion is asked him, and when his *Pulſe* is felt, he draws back his Hand in a trembling Condition, he will certainly *Die*.

C H A P. VIII.

*Of Prognosticks taken from Excretions
by Stool and Vomiting.*

THE Animal Life depends upon many and different Causes, and an Integrity of all the Parts of the Body; especially, those that are principal, as the *Head, Heart, Arteries and Veins*, and the Liquors that run in them, namely, the *Blood, Chyle, Lympha*, and *Animal Spirits*. But, because our Bodies cannot always continue in the same State, its Parts both Solid and Fluid being worn, consumed, and dissipated by continual Motion; there must be a continual Supply of Food for its Reparation, as well as proper Instruments and Vessels in which it may be prepared and made fit for that purpose.

Nature therefore hath contrived the Stomach, Intestins and Glands, in which, by a wonderful Mechanism, our Food is pounded and concocted, and its grosser Parts separated from those that are more fine and subtil, the one for the preservation of Life, and the other as useless to be thrown out by *E-munctories* ordained for that End. But when those Instruments are defective (which often happens) and the Muscular force of the Stomach, is insufficient to grind the Food and
make

make a *Chyle* of fine Parts, that which we receive for Nourishment and Reparation of our Bodies, not being duly prepared, is so far from being useful, that it is rather hurtful to us. For, this unconcocted Food or Crudity, entring into the Mass of Blood, renders it viscons, tough, and of a clammy substance, unfit for Motion and Circulation, and the cause of most Diseases.

Whatever therefore is useless to the Body, or inconsistent with the Blood, must be separated from it, that it may be preserv'd in a perfect State. Hence are the Endeavours of Nature, and the Contrivance of the *Intestins*, *Ureters*, *Salivary*, and *Cutaneous Glands*, and other *Emunctories*, appropriated indeed to their peculiar Excrements, but sometimes common to all or most of them. For in a living Body, all its Vessels are Transfluxible and Pervious, so that in time of Necessity, not only the thin and *Serous Humours* and Excrements, but also some that are more gross, are transmitted through insensible Passages. Thus,

In a *Pleurisie*, Blood and Purulent Matter penetrate the thick Substance of the *Pleura* and Membrane that cloaths the *Lungs*. In the Cure of a *Dropsie*, a greater Quantity of Water is voided by Stool in one Day, than possibly could be, unless that which is contained in the *Abdomen*, should pierce the Tunics of the *Intestins*. And sometimes we see, that, even the *Blood* by a strong impulse or obstruction, leaves its Channels, and runs through all the Ways and Passages of
 Se.

Secretion, as into the Cutaneous Glands by Sweat of Blood, *Spitting* of it at the Mouth and Nose, Evacuations of it by the Reins, Womb, Duodenum, and many other Passages, which it finds for it self, when obstructed in the Veins. In the Jaundice, we see the gross Liquor of the Bile or Gall, when it cannot pass by the Cholodocus and Porus Biliaris, to be thrown out with the Excrements, finds a way into the Veins and Mass of Blood, and thence into the Cutaneous Glands, where it tinctures the Skin with a Yellow and Citron Colour, and affects the Mind and Senses, with a Thousand various Representations. An overflowing of Pituite by the Salivary Glands is restrained and cast out by Sweat in the Cutaneous Pores. A Diarrhæa or Loosness can be stopt by translating the Peccant Humour into the ways of Transpiration, when open'd by Diaphoretick Medicines, or raising a Salivation, both which, are again diverted and restrained by Catharticks and Purgatives.

This being consider'd, either with respect to Natural Secretions, or the Effect of Medicines, is sufficient to obviate the Doctrine of Configuration of Pores, Attraction or Magnetism. For, these last mentioned are inconsistent with Philosophy, and the Laws of Mechanism, and the first, namely, Configuration of Pores, justly rejected and confuted by the Learned Doctor Pitcairn, (a) chiefly, because, as he has ingenuously observed, and evidently demonstrated, that, the Orifices of the Vessels, Pores of the Glandules, and Parts of the Body with respect to their

Figure

(a) Dissert. de circul. Sang.

Figure and *Structure*, are different from one another, only, in *Amplitude* or *Lesser* and *Greater Diameter*, and that they are of a *Circular Form*, when dilated, by the impulse of the *Liquors* that run in, or are separate by them.

This is Evident in all the *Organs* of *Secretion*, especially, in the *Conglomerated Glands* of the *Reins* and *Liver*, and the *Conglobate*, *Milliary* and *Cutaneous* ones, *these* serving to the *Secretion* of the thinner *Fluid* or *Serum*, and *those* for that of the *Liquids* of grosser *Parts*. For, the *Orifices* of the one are different from the other only in their *Diameter*. And tho' these *Fluids* thus separated from the *Blood*, cannot be said to *Circulate* with it; Nevertheless, while they are in the *Body*, they have a constant tho' slow *Motion*, and the *Secretion* of them whether *in* or *Extra Animal*, is equally necessary with the circulating *Blood* for the *Preservation* of *Life*. For, to *Secretions* too much *Augmented* or *Diminished*, most *Distempers* owe their *Origin* and *Causes*, and not to a *Spontaneous Flux* and *Reflux*, *Benumbedness* and *Sluggishness* of the *Animal Spirits*.

There is yet one thing to be noted for the better understanding of the following *Observations*, namely, that as some *Humors* or *Liquids*, as *Urine*, *Sweat*, and the like, after they are cast out of the *Body*, cannot again return into it, so there are others, as the *Bile* and *Phlegm*, which, tho' they be separated from the *Blood*, and reach to the

Intestins; yet, go no further, but return into the *Lacteal Veins*, (if they be much vitiated) and thence again into the Mass of Blood. To this, may be owing a great many Obstructions and Symptoms of Diseases, and different Affections of the *Urine*, *Spittle*, *Sweat*, &c. and why the first is sometimes *Bilious*, troubled and full of *Dregs* and *Sediment*, and the second which is naturally *Sweet* and *thin*, should be *Salt* and *Sharp*, and *purulent*, and why the last should be *bitter*, and of an ill *smell*.

But this having some respect to the Secretions in *Animali* and Laboratory of the Blood, we return to consider those that are made *extra Animal*, or Excretions, by *Stool*, *Urine*, *Vomiting*, *Salivation*, *Hemorrhages*, *Sweat* and *Insensible Perspiration*, &c. and what's portended by them.

As to the first of these, its *Necessity* is so obvious, that nothing can be more; all Obstructions in the *Prima via*, being always followed with unavoidable Distempers: for the preventing of which, *Nature* hath wisely contriv'd, that both *Stools* and *Urine*, which are more *Heterogeneous* in their Nature, and consist of more ponderous parts than other Liquids or Excrements, should be separated and thrown out by the largest Vessels and Orifices of the Body. And as the Gravity of Food in the Stomach, variously presseth upon its Coats, by which the Course of the Fluids through their Vessels are changed and affected (to which also may be ascribed the Changes and Alterations that happen

happen in Digestions) ſo likewise, when there is a Congestion of ponderous *earthy* and *ſlimy* Matter (as all Excrements are) in the Glands and *prima via*, the adjacent Parts must be pressed upon, their Functions interrupted, and a thousand Disorders brought upon the Body. But besides the largeness of the Vessels appointed for casting out the *grosser Excrements*, no less necessary were their Structure and Contrivance, their different *Diameter*, and remarkable Length (which commonly is seven times that of the Body) and various Circumvolutions, their *peristaltick* Motion, and *Contraction* of their Fibres from the *Pylorus* to the *Anus*.

The Excrements thus thrown out by *Stool*, being consider'd with respect to the State of the Body, are to be observ'd, whether they be *good* or *bad*, i. e. *crude* or *concocted*, the *Time* when they are cast out, if *copious* or not, and of what *colour*, how long they continue, and what ease the Patient has by them, and what are the *Signs* that accompany them. And here we are to take notice of the *Nisus* of *Contraction* in all the solid Parts, especially that which is evidently perceptible and demonstrative in the *Peristaltick* and *Vermicular* Motion of the *Guts* and *Sphincters*; which when they are not extended or dilated by the solid or fluid Matter contain'd in them, forthwith tend to *Contraction*, as we see happens after going to *Stool*, *Child-bearing*, and when the *Stomach* is *empty*, the *Surfaces* of the *Intestines*, *Womb* and *Stomach*, being brought nearer to one another.

But,

But, when the Fibres of the Intestins come to be *relax'd* and *flaggy*, and their *Contraction* is less than usual, or an unusual quantity of solid or liquid Substance is contain'd in their Cavity, or whatever be the Alterations, Changes and Indispositions that may be brought upon them, the Effects of it for most part appear in the Excrements.

Hence are the *thin* and *frequent Stools* mix'd with *Gall*, Slime and other Humors in a *Diarrhæa*, voiding of the Meat we have eat or swallow'd, very little chang'd and alter'd, sometimes having a mixture of thin Excrements, and sometimes having none at all, in a *Lienteria*. In the *Passio Celiacæ*, we void all those Excrements in an unusual Consistence mix'd with *Chyle*; and in a *Dysenteria* with *Blood*. All which different *Appearances* being owing to a greater or more frequent *Contraction* of the Guts, *Relaxation* of their Fibres, and an unusual quantity of liquid Substance contain'd in the Cavities of the Intestins. But,

When the *Intestins* are sound and intire, the *Excrements*, as described by *Hippocrates*, are *soft* and *coherent*, of a *reddish Colour*, and *tollerable Smell*, thrown out as at the usual time in a State of Health, and in a quantity proportioned to the Food and Diet. But those that are *hard* and *black* denote a *Heat* and *Inflammation* in the Intestins, and a Consumption of the *Lymph*; as those that are too *liquid*, signify a *Plethora* of Phlegm, crude Humors, and a Coldness in the Constitution. *Fat* and *viscous Stools* denote a melting or colli-

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quation

quation of the fat and ſolid Parts, than which there is no *Sign* more dangerous, if they be accompany'd with a ſtinking Smell, a black Colour, and other like Circumſtances, in ſharp and acure Diſtempers, unleſs this appearance be owing to fat and glutenous Food and Nouriſhment, or thick Phlegm. Again,

The different Colours of Excrements proceed from the greater or leſſer quantity of *Bile* mix'd with them. This Liquor indeed, whether we conſider it in its *ſaline*, ſulphureous and volatile Parts, or with reſpect to its Origine, Progreſs, and Motion into the Inteſtins, ſeems chiefly to be deſign'd for ſeparating and refining the *Chyle*. So that if the *Chyle* ſhould not deſcend into the Inteſtins, there had been no uſe for the *Bile*. But when there is too great a plenty of this Gall in the Inteſtins, and at the ſame time little or no *Chyle*, the Stomach and Inteſtins muſt be variously affected with *Nauſeouſneſs*, *Spitting*, *Vertigo's*, *Anxieties*, and the Head and Breſt, with Pains and Uneaſineſs. Moreover, a more than uſual quantity of *Bile* changes the Excrements to a *greeniſh Colour*, which ſignifies a redundancy of acid Humors, threatening Death to the Patient, or a lengthening of his Diſeaſe, eſpecially if this Colour, with a loathſome Smell, appear at the beginning of his Diſtemper. But no Danger is preſaged by it to *ſuckling Children*, whoſe Excrements are often greeniſh colour'd by reaſon of the Acidity and Corruption of their Milk. *White Stools* are owing to Crudities and Indigeſtion, or an Obſtruction of the *Bilious Tracts*, ſo
that

that that Liquor cannot paſs into the *Duodenum* (as it happens to thoſe affected with the *Faundice*, whoſe Excrements are always *whitiſh Colour'd*) but is transferr'd into the Veins and Cuticular Glands. Such Stools muſt be dangerous in all acute Diſtempers, eſpecially in the Diſorders of the Head; and of the ſame nature are thoſe that are *yellow, ruſty, livid, black, party-colour'd*, and of a *high Smell*, which for moſt part denote Death (a) Aph. 23. § 4. or Diſeaſes of a long ſtanding (a).

Froathy Stools in a *Loofeneſs*, according to Hipp. (b) proceed from Pituite or Phlegm in (b) Aph. 30. § 7. the Head; but more probably from a Mixture of *Bile* and *Pituite* iſſuing from the Traſts of the Liver and *Pancreas*, or the Glandules of the Stomach and Inteſtins. However it be, ſuch Stools in Fevers are no good Sign, but yet worſe when they are chang'd into thoſe that are *ſincere*, i.e. conſiſting of one Humour and Colour, without any mixture of Phlegm or Serum.

'Tis an *omenous* Sign in all Acute Diſeaſes, when Food and Eatables are voided without being alter'd and digeſted; and every body knows the danger of *immoderate Loofeneſs*, becauſe it enervates the Strength, and cauſeth *Fainting, Convulſions* and *Hiccups* (c), by (c) Aph. 4. § 5. draining and emptying the *Viſcera* and Inteſtins, and contracting the Nerves. And on the other hand, *Stools* of a ſmall quantity, and ſuddenly check'd or ſtopt, are not only unprofitable, but pernicious; when the peccant Humor, that was caſt into the Inteſtins, recoils upon the Blood; upon which account we find it always dangerous to give.

a sudden Check by astringent Medicines to *Diarrhæas* or *Dysenteries*.

(a) Aph. 16. § 6. A *Looseness* is dangerous, when it comes upon the Invasion of any acute Distemper, and continues with it, especially in *Pleurisies* and Distempers of the *Lungs* (a); but it contributes to the Cure of an *Opthalmia*, or Inflammation of the Eyes (b), and all Diseases of the Head. If it arises, as frequently it doth, from *Grief* and *Passions* of the *Mind*, it is in a manner incurable, if the Cause of the Grief remains: For this sort of *Looseness* uses to be follow'd by an *Erratick Fever*, till the Patient wastes and pines away to Death. And as it is very pernicious in the Diseases of the *Breast*, so likewise 'tis offensive to Women in Childbed, and Children, seiz'd with malignant Fevers. It is always inflam'd by eating of Meat. But if it insues upon a *Delirium*, especially when the Disease tends towards a Concoction, it takes off the Distemper, the Disorder of the Spirits, by which the various *Species* were represented to the *Mind*, being check'd and implicated with the Humors. And nothing contributes more to the cure of *Palsies*, that are owing to phlegmatick or watery Humors, than a supervening *Diarrhæa* or *Looseness*, that's moderate and tollerable: For such must diminish the too great Moisture and Humidity of the Fibres and Nerves by which they are relax'd, and their Liquor embarrassed and intangled, but an *immoderate Looseness* dissolves and consumes it. For in all *Diarrhæas* there is a vast Expence of the useful and necessary

necessary Humors, that are caſt forth with the bad, and thus obſtructs the Nouriſhment of the Body, becauſe the Food is not converted into *Chyle* for its reparation, but into liquid Excrements, which of all others are the moſt ponderous and weakening.

Every one knows the fatality of a long continued *Dysentery*, concerning which it may be further obſerv'd with a late Author, that if one in this Diſtemper is ſeized with an Inflammation of the *Tongue*, and a *Difficulty* of *Swallowing*, there is no hopes left; but if he break wind downwards after its abſence for ſome time, 'tis a *Sign* of Recovery. But in a deſperate *Ilia* Fit, if a great deal of Wind breaks downward with a Stink, 'tis a Harbinger of Death.

The *Atra Bilis* frequently mentioned by *Hippocrates* (a), and which he condemns as a (a) *Aph.* mortal *Sign*, being caſt out by Vomiting or ^{22, 23, 24,} Stool in the beginning of Diſeaſes, ſuch as ^{§ 4.} *Dysenterys*, and in one word, in whatever Diſtemper, ſeems to have been an Humor peculiar to *Greece*. And tho' the Excrements in more Northern Regions, in ſome Diſtempers are ſometimes *yellow*, *livid*, and of a *ruſty Colour*, of which above; yet, that theſe Colours are owing to a certain quantity of *Bile* mixed with them, ſeems to be very plain: For the more of *Bile* that's mix'd with Water and Phlegm, the Colour is the more *yellow*, and the leſs there is of wateriſh Phlegm, 'tis the higher colour'd, and tending to Blackneſs; and when the Blood is deſtitute of its due proportion of *Serum*, blackiſh

and deep or pale colour'd *Bile* may be generated and mix'd with the Excrements. Besides, that the Colour of Excrements may proceed from Medicines, Food, or crude Humors a long time lodg'd in the Intestins.

Upon this score, in forming just *Prognosticks* from the *Stools* of the *Sick*, a due regard must always be had to the *Food* and *Medicines* that have been administred, because both the one and the other very often change and alter the Substance, Quantity and Quality of the Excrements, imposing upon the unwary, who take those that are natural to be quite otherwise. Thus we see, that from eating of *Onions* or *Garlick*, their peculiar and nauseous Smell is very perceptible when vomited up. Potions of *Senna* yield *mucous Stools*, Medicines of *Rhubarb*, those that are yellow, *Pulp* of *Cassia*, and Preparations of *Mars*, or Pouder of *Myrtle-berries*, dy the *Stools* of a *black Colour*. And lastly, whatever the Distemper be, especially if it be a Feverish one, we must carefully consider, whether this Evacuation by *Stool* be *Critical* or *Symptomatical*; for according as 'tis this or that, so is our *Hope* and *Fear*. But after all, we are not to think that all *Critical* Evacuations are follow'd with Recovery, or are Salutary, seeing all *Crisis*'s are not such; and therefore the Doctrine and Precepts concerning them must be the more cautiously apply'd: For it hath been often observ'd, that some, after *Critical* Evacuations, have expired in a little time, and others have recover'd, that have been brought to the last Breath,

Breath, by *Symptomatical* Excretions and Evacuations; of which, in the next place is

VOMITING, which lies under the ſame Rules with *Excrements* by *Stool*, and not only contributes to the diſcovery of the reſpective Nature and Cauſes of Diſtempers and Indispoſitions, but alſo to indicate their *Event*. But *Vomiting* is not here conſider'd as *Periodical*, happening at certain times, as once in the Month, or once a Week, or every day, as I have obſerv'd in ſome, without any uneaſineſs and detriment to the Patient; nor as is it *Artificial*, and *procur'd* by Medicines, or any external Cauſe, as Strokes or Falls, contagious or venemous *Air*, noyſome Smells, violent Exerciſes, going to Sea, Surfeits and hyſterick Fits, and the like; but as it is produc'd by ſome internal Cauſe, *Symptomatical* or *Critical*. In order to which, 'twill be requiſite we ſhould obſerve, that

Whenſoever any unnatural *Juices* or *Humors* are generated and congeſted in the *Stomach*, or ſtrain'd into it from the *Glands*, we have not always a *Senſation* of it, like that of *Hunger*, unleſs they be of that nature to affect us as *this* doth; and therefore as the *Humors* are *viscous*, *acid*, and *corroding*, or ſo powerful to inſinuate themſelves into the Membranes and Coats of the *Stomach*, ſuch is the *Senſation* excited by them, and is ſometimes only a ſlight twitching, but then more gnawing and cutting, &c. cauſing Pains, *Heart-burning* and *Hiccups*. Now for the production of theſe Effects, no Hu-

mor it more powerful than that of the *Bile*, whose Parts being remarkably *Salt*, *Sulphureous*, *Acid*, and *Volatile*, are easily derived from the *Duodenum* into the Cavity of the *Stomach*, and its most *Volatile* Particles diffused upon the *Surface* of the *Oesophagus*, first occasioning an *Aversion* to Food, and then a *Contraction* of the *Stomach*, or a sudden *Convulsion* of it, by which whatever is contained in it, is thrown out by the Mouth in *vomiting* or *wreaching* only, if the *Stomach* be empty. But, as *Vomiting* is thus caused by plenty of unnatural *Humors*, especially that of *Bile* congested in the *Stomach*; so likewise by an embowldning of the *Arteries* and other *Vessels* pressing upon its *Nerves*, or by a greater than usual quantity of *Spirits* derived into the *Muscles* of the *Stomach*, which necessarily must cause a sudden *Convulsion* and *Contraction* of it. Thus it happens in a long *Paroxysm* of *Vertigo's*, exquisite Pains of *Nephretick Collicks*, and other *Distempers*.

I propose not to my self to account for *Vomiting* procur'd by *Emeticks*, or to determine, whether in this case, it be owing only to an *Irritation* or *Stimulus* of the Coats of the *Stomach*, or to an *Attraction* (so to speak) of *Humors* into it from the adjacent Parts. But 'tis certain, that the *Effects* of *Vomiting*, whether *natural* or *procured*, are very extensive towards the preventing of many *Distempers*: For, besides the freeing the *Stomach* from any oppressing Matter, which 'tis very apt to congest, and which, whilst lying there, perverts

verts Digestion, either by hindering the Erup-
tion of, or allaying and depraving the Li-
quors that *ouze* into it from the glandulous
Coat for promoting Digestion; the *Irritation*
and *Concuſſion* extends not only to the Glan-
dules and Nerves of the Stomach, but by
conſent of the whole Nervous System, to
thoſe all the Body over, whereby they are
contracted to the diſcharging of whatever
loads, or is diſagreeable to them.

Thus the Body is diſcharg'd of its Impu-
rity by a nearer and more expeditious way of
Evacuation, than by the various and flow
Turnings of the *Inteſtins*. And nothing is
ſo conducive to render the viſcous Humors
impacted in the *Viſcera*, fluxible, to take off
Obſtructions, and the moſt hidden and latent
Causes of Diſeaſes. For, by ſuch a violent
Concuſſion of all the Parts of the Body, the
Inteſtines are ſtimulated to diſcharge their
Impurity by *Stool*; the Liver and *Pancreas*
by the *Cholodocus* and *Porus Biliarius*; and
the *Spleen* probably diſchargeth its Excre-
ment into the Stomach by ways yet unknown
to us; the *Reins* their *Serum* by the *Ureters*;
the *Lungs* their *Mucus* by the *Windpipe*; the
Brain, *Palate*, *Noſe* and *Eyes*, throw forth
their Pituite and Salt *Serum*, and the whole
Body by *Sweat* and *inſenſible Perſpiration*.

But notwithstanding all theſe *Advantages*
of *Vomiting*, whether excited by Art or Na-
ture, in ſome caſes hereafter to be mentioned,
nothing is more dangerous, or attended with
more fatal *Events*. By *Art*, when *provok'd*
in thoſe that are very young, or whoſe
Weakneſs

Weakneſs cannot bear ſuch a Tumult and univerſal Evacuation. Neither is it ſafe in Spitting of Blood, Conſumptions, Hemorrhages at Noſe, or when there is any internal Apertion of the Veins, and ſuch like. But now of *Spontaneous Vomiting*.

(a) Aph.
15. § 6.

When *this* comes upon a long continued *Loofeneſs*, the Diſeaſe goes off in a little time (a), but 'tis quite otherwiſe, when it comes upon a *Dyſentery*; and no leſs unlucky is a *bilious Vomiting* in the beginning of that Diſtemper. Matter of a *ruſty, livid, black and leek colour*, vomited up with a *ſtinking Smell*, are ſaid to be mortal, and *Hippocrates* in his *Epidemics* gives us many Inſtances of it; but after all, they ſeem to be only ſome particular Caſes, accompany'd with other grievous *Symptoms*: For we ſee ſuch colour'd Matter often vomited up without any danger, eſpecially in *Hysterick Fits*, which upon this account have been taken for a *bilious Colick*, or the *Iliack Paſſion*; the Matter vomited up being of the colour of Herbs. And in *Sea-ſickneſs*, ſuch colour'd Matter has been caſt up from the Stomachs of thoſe in perfect Health. The like is commonly obſerv'd in the Excrements of Children in *Convulſive Fits*, when voided either upward or downward. The *black Colour* in *Vomiting* is indeed a moſt dangerous Sign, being cauſed by a Relaxation of the *Viſcera*, and as 'twere a *Palfy* of the whole Body, and threatens approaching Death. But if this happen to thoſe that are young, and to Old Men, whoſe ſolid Parts are naturally looſe and

and flaggy, the greater is the hope of Recovery, and of eſcaping from the threaten'd Danger.

The *violent Vomiting* in the *Iliack Paſſion* muſt needs be mortal, becauſe it ariſes from the inverted and prepoſterous Motion of the *Inteſtins*, and their *Fibres*, which ought to be contracted from the ſuperior towards the inferior, but in this Diſtemper are contracted to the ſuperior: So that whatever is contained in them, is vomited up at the *Mouth*, contrary to the wonderful Contrivance of Nature, which hath form'd the Folds and Circumvolutions of the Guts in the moſt-fit and conducive Order to carry the *Fæces* down to the *Anus*. Here it may be obſerv'd, that ſometimes in the *Cholera Morbus*, when *Vomiting* is unſeaſonably ſtop't, either by *Opiats* or *aſtringent Medicines*, a worſe Train of Symptoms follow: For the ſharp and corrupted Humors being repelled, exert their Fury and Force upon the Blood, or are mixed with it; and thus ends in a *Fever*, which is equally dangerous with the Diſtemper.

Vomiting of *Blood* is always dreaded, and (a) Aph. attended with Danger (a), eſpecially when it ^{25.} § 4. comes from the *Lungs*, or an Apertion or Corroſion of the *Sanguiferous Veſſels*; yet this *Symptom* hath been ſometimes *critical*, and beneficial to the Patient. Thus Women have ſometimes vomited *Blood* in the *Suppreſſion* of the *Menſes*; in which caſe it is not to be ſuddenly ſtop'd, unleſs the quantity vomited up be greater than is uſual in its natural Courſe. But more of this when we come to ſpeak of *Spitting of Blood*. C H A P.

C H A P. IX.

*Of Prognosticks taken from Salivation,
and Spitting of Blood.*

WHilst the *Chyle* is only in the *Stomach* and *Intestins*, 'tis said to be *extra Animal*, and when it is receiv'd into the *Lacteal Vessels*; its State and Condition is but little different from what it was in the other, except that 'tis a little more refin'd in the *Glands* of the *Mesentery*, for, as yet it is *Salt* and of a *whitish Colour*. But, by the Accession of the *Lymph*, 'tis rendred thinner and more Fluxible to pass into the *Subclavian Vein*. And it's last State is in the *Veins* and *Arteries*, where after some Hours, it looses its Colour, and is purged from the greater Part of its *Salt*.

But this deluting of the *Chyle*, seems not to be the only use of the *Lymph*; For some of its Vessels discharge this Liquor, not only into the *Thoracick Chancel*, but also immediately into the *Veins*. Some come from the *Viscera*, and the *Glands* of both Sorts, namely, the *conglobated* and *conglomerated* ones, from the first, the *Lymph* is carried into the *Veins*, and from the last into particular *Chapels* and *Cavities*, as into the *Eyes*, the *Mouth* and *Duodenum*, &c. And tho' their Number be infinite, and in every Part of the

Body,

Body, and their Orifices like to other Channels, *i. e.* of a Circular Form. Yet, thoſe that are moſt remarkable, are the *Salivary Veſſels*, which come from the *Parotides*, and Maxillary Glands, in which, the *Lymph* or *Spittle* is filtrated, before 'tis received into thoſe Veſſels, which terminate in the *Mouth*, under the Point of the Tongue and Lower Grinders, *Palate* and *Oeſophagus*.

And as the *Lymph* thus ſerves for a Conveyance to the *Chyle*, until it enter the Veins, and there alſo delutes the Blood; ſo is it alſo ſeparated from the Blood, that there may be a continual Stock of it for proper Ends and Purpoſes. And if we conſider the vaſt Number of *Salivary Glands*, and the great quantity of *Lymph* or *Spittle* that's continually emptied into the *Stomach* and *Mouth* (not to mention its *Principles*) we muſt be convinc'd, that Nature never deſign'd this Liquor but for the nobleſt Uſes. But, on the other hand, when it comes to be ſuperfluous, *i. e.* when there is more of it than is neceſſary to delute the Blood, &c. or, when 'tis obſtructed and loaded with *Heterogeneous* parts, we are not to wonder it ſhould be the cauſe of ſo many and different Diſtempers as are aſcrib'd to it. For,

Nature hath deſign'd, that this as all the other *Liquors* and *Juices* of the Body ſhould be of a *Determinate Quantity*, and the Superfluous part to be caſt out *quâ datâ portâ* by Stool, Urine, Sweat, inſenſible Perſpiration and *Salivation*. But not being carried off by either of thoſe ways, it ſwells and em-

embouldens its Veſſels; occaſioning *Rheumatisms* and *Gout*, and ſometimes to that bigneſs, that at laſt they muſt break and terminate in *Dropsies*. Or, it takes place in the finer Veſſels of the *Brain*, fills and ſtuffs its Glandules, relaxeth its Fibres; intangleth the ſubtil active Parts, or thoſe called *Spirits*, makes them ſluggiſh and unactive, or obſtructs the generating and ſeparation of them from the Blood, and thus cauſeth *Lethargies*. Or it diſtills into the Pulmonary Veſſels where it thickens, becomes viſcid and hard, and productive of a Thouſand Diſorders.

'Twere endleſs to recite and account for all the Effects of a *vitiated Lymph*, and alien to my Purpoſe to adduce the Cauſes to which it is aſcribed, ſuch as are a Coldneſs in the Blood and Conſtitution, an obſtructed Perſpiration, cold and watry Meats and Drink, cold Weather and thick Air, exceſſive drinking of Spirituous Liquors, want of Exerciſe and Exceſſive Venery, and the like. We are therefore to view it as it falls under the Denomination of *Saliva* or *Spittle*, and conſider it with reſpect to its thinneſs, thickneſs and viſciduity. And as it is *equal* or *round*, *frothy*, *bloody* and *putriſied*, as it is *white*, *pale*, *yellow*, *reddiſh*, *livid*, *black*, and of a *mixed Colour*, as its *Smell* and *Taſt* is *ſtinking* or *inſipid*, *sweet*, *bitter*, or *acid*, and caſt out with *eaſe* or *difficulty*, and what's *imported* and *preſaged* by it under one or more of theſe Circumſtances.

First then, we never have a bad Opinion of *Spittle*, that's *white*, *light* and *equal*, and when it is neither too *thick* nor too *thin*, but easily hawk'd up without *Pain* and a *violent Cough*; nor of that which appears upon the first Invasion of Diseases of the *Breast* and *Lungs*, (a) especially in *Pleurisies*, tho' it (a) *Aph.* be *redish* by reason of a mixture of Blood ^{12. § 1.} and *Piruite*; For such *Spittle* is cast up in that Distemper to the Advantage of the Patient, if it Commence before the fourth Day, but after that time his Strength is often exhausted, and the *Spittle* comes to be so much thickned, that it cannot be easily brought up, and thus inflames the Disease; so that not only in this Distemper, but also in Inflammations of the *Lungs*, 'tis a dangerous *Sign* when the *Spittle* is *white*, and altogether of *Phlegm*, like that of those in Health, for it tells us that the Peccant Humour is yet lodg'd in the *Breast*.

Again, as long as Feverish Persons *Spit*, they are out of Danger in continual, as well as intermitting Fevers. So it is with those that are *Pibisical*; for they live as long as they can *Spit*, and die when it is suppress'd, the *Salivation* being follow'd with *Strangling* and *Snorting* in the *Throat*, occasioned by the viscosity of the impacted Matter in the *Lungs*, so that upon this account, or want of Strength it cannot be hawked up and expectorated, but in a little time must end in *Suffocation* and *Death*. The like Symptom often happens in *Asthmatical* Paroxysms but with less danger.

When

When *thin Pituite* that ſhould have been carried off by inſenſible Perſpiration, or other Ways of Excretion, falls upon the *Pulmonary Veſſels*, 'tis thrown ont with ſuch Violence and Force, that it often breaks the little Veins, or weakens and relaxeth the Channels of the Glands; and if this Humour cannot be caſt out this way, it becomes thick and corrupted, and then thrown out like *Pus*, the *Glands* being ulcerated, and the *Consumption* confirmed. And if in *Coughing*, little things like Hail or Grains are brought up, and theſe ſtink extremly when ſqueez'd with ones Fingers, a Latent *Vomica* or *Impoſthume* in the Breſt is always ſuſpected. Some, indeed, in this Condition have lived ſeveral Years, and at laſt have been ſuddenly cut off by the Rupture of the *Vomica*. For, after ſuppuration, the Purulent Matter breaks out into the *Wind-pipe*, and choaks the Patient. But the further the *Vomica* is diſtant from the Center of the *Lungs*, the leſs danger there is of *Suffocation*.

There is no more certain Sign of Recovery in *Lethargick* Diſtempers, than a Copious *Salivation*, this indiſpoſition being owing to cold, watery and groſs Humours congeſted in the *Brain*. For, when the *Salivation* appears, it tells us that the *mucuous Matter* is rendred fluxible with the Blood, and brought by the Arteries which are diſtributed among the *Salivary Glands*, and thoſe of the Noſe, to be thence ſeparated and thrown out.

Yellow

Yellow Spittle (which is likeſt to that which is *white*) having little or no mixture of Blood, is a Sign that not only the *Pulmonary Veſſels* are not much vitiated, or the Blood Veſſels corroded, but alſo that there is either an approaching Conversion of the matter into *Pus* without any afflux of Blood, or that the *Phlegmatick Humour* comes to be caſt up. Therefore, if ſuch *Spittle* happen at the Beginning of the Diſtemper accompanied with the forementioned Circumſtances, there is hope of Recovery. But if latter, we may be aſſured, that there is much *Morbifick* and unconcocted Matter congeſted in the *Pulmonary Veſſels*, and that thoſe finer Membranes are cut and corroded, than which there is no Sign more dangerous.

Green, Livid, and ruſty Colour'd Spittle with a noiſom ſmell, ſignifies an extream Heat and Inflammation of the *Viſcera*, threatening Danger to the Patient. But no ſuch thing is portended by *foaming Spittle*, when it is cauſed by Anger or violent Exerciſe, nor by that which is commonly ſeen in the Mouths of thoſe in *Convulſive Fits*: But when it happens in *Quinſies*, and to thoſe in an *Apoplexy*, there is no hope of recovery. For *Foam* conſiſting of Air, and a mixture of Liquid viſcous Matter, ſeparated into the Mouth by the Orifices of the Salivary Channels, or ſmaller Glandules of the Lungs and Wind-pipe, tells us, that there is not only an unuſual Quantity of this Viſcous Liquid in all the Veſſels of the Body, but alſo, that
the

the *Oeſophagus* is almoſt entirely ſhut (having only a ſmall Cleft in the *Larynx*) and that the Tone of the *Fibres* is diſſolv'd and irreparably relaxed.

Laſtly, *Salivation* in a State of Health, may be conſider'd, as it is *natural* or *forc'd*, and procur'd by *Medicines* or other means. That which is *natural*, is more or leſs dangerous according to ones natural State and Conſtitution. Some being of a *Plethorick* and blouted habit of Body, puſt and blown up with *Phlegmatick* and watery Humours, are much benefited by *Spitting*, and ſuch like Evacuations. For, of all the Humours in Humane Body, the *Lymph* by reaſon of its ſlow Motion and unactive Parts, is moſt apt to be *Coagulated* and *Congealed*, and then with much Difficulty diſſolv'd. And tho' thoſe in this State ſeem to be in Health, yet they are nothing leſs, being ſluggiſh and unactive, and unfit for Animal Motions and Exerciſe. The *Colour* of their *Face* is Natural and freſh, they Spit little and have no Appetite, they Sleep much and ſometimes are Feveriſh; and when all remedies prove ineffectual, they are at laſt ſuffocated and drowned in their own Humours, and by Degrees ſtep into the other World.

But 'tis quite otherways with thoſe who are of a *Lean* and *Thin* Habit of Body, their *Lymphatick Veſſels* being already ſhrunk, withered and dry, either by ſenſible or inſenſible Evacuations or Perſpiration; are rendred much more ſo, by profuſe *Spitting*, whether *natural*, or *forc'd* and procur'd by exceſſive

Smoaking

Smoaking or otherways, whereby the Stomach is deprived of this *Menſtrum* and natural *Balsam* that ſerves to carry off its Impurities, moiſten and delute its Coats, and keep its Fibres in a due *Tone* and *Contraction*. And therefore it cannot be ſtrange, that, thoſe who for a *ſmoaky Pleaſure*, are ſo profuſe of this *Liquor*, (for it is not always an unprofitable Excrement) have little or no *Appetite*, are *weak* and *languiſhing*, and for moſt part *Coſtive* and *Pale Coloured*. But all this is to be underſtood with reſpect to thoſe in Health, and whoſe Habit of Body is *Thin* and *Lean*. For, the *Spittle* of thoſe that are *Scorbutick*, or affected with *Venereal* Indispoſitions, is *morbifick*, and therefore to be thrown out, that the Venom of that Diſtemper may be taken off. But here we are to obſerve, that, *Salivation* procur'd by *Mercurial Medicines*, eſpecially in thoſe that are Lean, and continues long, is, often followed with a *Heſtick* and *Conſumptive* Diſpoſition.

As to *Spitting* of *Blood*, than which there is no *Appearance* more frightful, it may deſerve to be conſider'd, that, tho' this *Liquor* be confin'd and bounded by the ſtrongeſt *Tubes* in Humane Body, as was neceſſary eſpecially in thoſe Parts neareſt the *Heart*, not only for promoting its Circulation, but alſo for reſiſting its impulſive and violent Motion : Yet, who knows not how often and how many and different ways theſe Chaneis are broken, corroded and divided, or otherways vitiated and rendred defective, ſometimes by a *Plethora* of Blood, a Suppreſſion

of uſual Evacuations, violent Motions of the Body, Intenſe Heat, and Paſſion of Anger, loud hollowing, violent Coughing, Worms, and ſharp Humours. And alſo when the Blood is too thin and rarified, for then it is eaſily filtrated, and penetrates the Pores of its *Tubes*; eſpecially, when their Fibres are flabby and relax'd. So that by whatever means, or *whereſoever* the Blood Veſſels are open'd, thence it will flow as ſometimes from the *Hemorrhoid Veins*, and which concerns our preſent purpoſe, ſometimes from the *Lungs, Breſt and Throat*, from the *Stomach and Inteſtins*, and from the *Noſe and Gums* into the Cavity of the Mouth, whence 'tis caſt out, and therefore called *Spitting of Blood*.

But, it being not eaſily known, when the Blood comes into the Mouth, and is caſt out thence, whether it proceeds only from the *Gums and Noſe*, and other Parts of the *Head*, or from the *Lungs, Stomach, and Breſt*: 'Tis therefore requiſite we further inquire, whether there be any Concomitant *Appearances*, and diſtinguiſhing *Signs*, that may bring us to a juſt view of this Affair. For, theſe being found, 'twill be no hard matter to know what's *portended* by this *Symptom of Spitting Blood*.

In the firſt place then, 'tis obſerved, whether or not, *Spitting of Blood* be accompanied with a *Cough*, and what's the manner of it. For, when the Blood comes from the *Stomach* by the *Oeſophagus*, 'tis ſaid to be al-
ways

ways vomited up, providing there be a considerable Quantity of it, and that which comes from the *Throat* only, to be *hawked* up easily, and when from the *Lungs* with greater *Violence*. But, nevertheless, the *Blood* that comes from the *Oesophagus* and *Throat*, is sometimes so viscid, that it cannot be *hawk'd* up without great *Violence* and *Coughing*; whereas, that which comes from the *Lungs* by the *Wind pipe*, is sometimes brought up more *easily*, and with little or no *Coughing*; especially, when the *Blood* is not very viscid, and of a small Quantity; so that it cannot be certainly affirmed, that in *Spitting of Blood*, a gentle *Cough* is an Argument of its coming from the *Throat* or *Wind-pipe*, and when more *violent*, from the *Lungs*. But whatever be the manner of the *Cough*, if there be no *Sign* of Disorder in the *Breast* and *Lungs*, or Antecedent Cause by which they may be affected, or suspected to be so, and the Patient is only sensible of a slight *tickling* in his *Throat*, but his Face is ruddy and flame-coloured, and complains of *Pains* in his *Head*, and the *Blood* is cast forth without any *Froath*, but afterward is *froathy*; 'tis certain, that the *Blood* comes only from the *Head*, and thence derived into the *Throat*.

On the other hand, when the *Blood* is *Froathy*, and brought up with *Coughing*, we are not to doubt that it comes from the *Lungs*, (a) especially, if it is not viscid and (a) Aph. glutenous, and comes from their lower Parts. 13. § 5.
For, in coming from thence into the *Mouth*,

its Parts are rarified and mixed with *Air*, and thus becomes, *froathy*, tho' it be no less such when it is also *viscid*. Now, that *froathiness* in the *Blood*, tells us that it comes from the *Lungs*, and not from the *Breast*, is yet more plain, in being brought up without any *Sense* of *Pain*. For, 'tis more likely that a Rupture or *Erosion* of the *Blood Vessels* in the *Breast* should be more painful than when it happens in the *Lungs*, whose tender Vessels are opened and broke, without the least *Sense* of *Pain*, as well as in *Hæmorrhages* at *Nose* and *Gums*. But, that *Blood* coming from the *Lungs*, should be of a *blackish Colour*, as some will have it, I think is hardly probable; chiefly, because in passing through the *Lungs* and *Wind-pipe*, it is mix'd with some *Particles* of *Air*, by which it is, as was just now observed, not only rendred *froathy*, but also more or less bright in its *Colour*, according to its thinness and viscosity.

But to put this Matter beyond all doubt, we are always to consider what happen'd to the Patient before he was taken with *Spitting Blood*; especially if he be affected with sharp and pricking *Pains* in his *Breast*. For in this Case, the *Blood* that's brought up, proceeds from the *Breast* or some *Tumor* in it; otherways it must come immediately from the *Lungs*, or is transferred into them from some other affected Part, either by *Fermentation* or *Plethory*, *Fervency* and *Rarefaction* of the *Blood* and *Humours*, by which

which the tender Veſſels of the *Lungs* are broken and corroded, and thereupon a *Spitting of Blood* muſt iſſue.

Now it ſeems to be plain what's portended and preſaged by it, if by the forementioned *Signs*, we rightly diſtinguiſh between that which is *Accidental* and *Habitual*. By the *fiſt*, I underſtand that which meerly proceeds from ſome Accident, as from *Hollowing* or *ſpeaking too loud*, violent *Exerciſe*, ſuppreſſion of *Hæmorrhages* and uſual *Evacuations*, intense *Heat*, and *Paſſion of Anger*, a *Plethora* of *Blood*, and violent *Coughing*, and ſuch like; which are taken off by the adminiſtration of proper *Medicines*, and ſeldom or never return again. But it is far otherwiſe, when the *Spitting of Blood* comes to be *Habitual*, and of a long continuance, or returns at certain *Intervals*; For this denotes a *Fervency* and *Acrimony* in the *Blood*, by which the tender Veſſels of the *Lungs*, being not able to reſiſt its quick and impulſive Motion, are wont one time or other to be opened or corroded, and then there muſt be a great Expence of that *Liquor*, which for moſt part does not ſtop, till the *Feveriſh Orgaſm*, and inteſtin Motion of the *Blood*, is taken off by Art, or ceases of its own accord.

This is that fatal *Spitting of Blood*, which is wont very often, to terminate in an incurable and mortal *Conſumption*. For, 'tis followed with *Spittle* of *Purulent Matter*, and when *this* is ſuppreſſed, the Patient

(a) Aph. Dies. (a) Because the extravasated and stagnated *Blood* in the *Lungs*, is not only converted into purulent Matter, by which their *Texture* is dissolved, and their Parts corrupted, but also the purulent Matter comes at last to be mixed with the *Blood*, and thus infects the whole Body. And, when the *Spiitle* is suppressed and *stops*, or detained in the *Lungs*, the Patient must die in a little time. Because the Blood Vessels must thereupon be obstructed, after which there is no *Circulation* or *Life*.

C H A P. X.

Of Prognosticks taken from Sweat, Insensible Perspiration, Hæmorrhages, and Blood taken from the Veins.

SWEAT is a thin sort of *Urine*, and differs from it, only in the Proportion of the Contents, and fineness of its Parts, disingag'd from the Mass of Blood, and thrown out upon the Cutaneous Glands and Pores of the Skin, by the impulsive Motion of the Circulating Blood. When it comes not under the Cognisances of the Senses, and ariseth only in imperceptible *Effluvia*, it is called *insensible Perspiration* or Evaporation. Of the first, namely, that which is called *Sweat*, some is gross and viscous, and sometimes it consists of more fine Parts. It is of different Colours, a thing not commonly adverted to or observ'd, some Sweat being Yellow, and of a greenish Colour, &c. We are not to wonder there should be such variety of Colours in Sweat, nor that it should be Salt, which as was observ'd, is inseparable to *Urine*, especially, when loaded with much *Sediment*: And 'tis well known, that *Sweat* hath its *Savour* and *Smell*.

It is likewise *Hot*, *Cold* and *Lukewarm*, and happens in all the *Periods* of Diseases. Sometimes it continues a long time, and
some-

sometimes 'tis ſoon Interrupted. Some *Sweat* is well *colled* and *refin'd*, and another ſort is Viscous and Crude. Some is *Critical*, and ſome *Sweats* are *Symptomatical* and *Periodical*, or *Partial*, as in intermitting *Fevers*.

In a State of Health, this *Serum* or *Ichor*, is moſt copious in thoſe of high feeding, and of a Plethorick Conſtitution and brisk Circulation, their *Pores* being commonly more open and pervous, than in others that are not ſo; but when theſe are ſhut up and contracted, the Humors that were wont to be caſt out by *Sweat*, muſt be lodged in the Blood and Capillary Veſſels, cauſing frequent Diſorders and Diſtempers, unleſs they be thrown off by ſome other *Emundtory*.

Were we to inquire how, and after what manner this *Serum* is driven into the Cutaneous Glands, and thence into the *Pores* of the *Skin*, the moſt probable reaſon that could be aduc'd, muſt be a ſtraitning or preſſure upon thoſe Glands, by the *appulſe* of fermented Blood; or, a rarefaction both of the Blood and Humours, by which the *Saline* and *aqueous* Parts of the laſt, are diſſolv'd and ſeparated one from another, and rendered *fluxible*, to be ſtrain'd into the Sudoriferous Glands, and thence deriv'd into the *Pores* of the *Skin*, and form'd into *Sweat*. And here we are to obſerve, that, a fervency, or violent and impetuous Motion in the Blood, tho' it cauſes a Preternatural *Heat* in the *Skin*, is not always attended with the Effect of *Sweat*, unleſs the Humours be duly attenuated, rarified and refined by frequent-
ly

ly circulating with the Blood. For, by the Rules of *Mechaniſm*, a due Secretion requires not only clear Pores, and a proportioned reſiſtance of the Solids, but likewise a proportional Motion and Quantity of the Parts of the *Liquid* to be ſtrain'd out, for if either of thoſe be wanting, the Matter to be ſeparated and thrown out, will either be obſtructed, or carried off a preternatural way.

Now the *Character* of all kinds of *Sweat*, being beſt known by their *Iſſue* and *Eſſects*, 'tis not to be doubted, that the *Sweat* muſt be good and Salutary, whereby the Diſeaſe is mitigated, and comes after the Signs of Concoction, a *Rigor* or *Shivering*, is Copious and Warm, and equal all over the Body. Such a *Sweat* denotes Power and Strength in the Patient, and a free *Circulation* of the Blood.

Such *Sweats* as are *profuſe* and laſt long, happening without any apparent Reaſon, ſignifie a full and Plethorick Body, (a) full of Crudities, and very often become *Colliquative*, that is, they carry off a great Quantity of the Nutritious Particles, as if they were melted and rendered more fluid than ordinary; and caſt out by the Pores of the Skin. whence it comes to paſs, that the Blood being continually impoverished, becomes *Sharp* and *Hot*, *Heſtick* and *Feveriſh*, and the ſolid Parts of the Body, by this Means, being alſo depriv'd of their requiſite Nouriſhment, do by Degrees waſt and fall into an *Atrophy*. This profuſe and *Colliquative Sweat*, as it accompanies

accompanies every *Consumption* of the *Lungs*, in the deplorable ſtate, and higheſt degrees of it, or when it is haſtening to a fatal Period, ſo is it obſerv'd in the lamentable ſtate of every Diſtemper, and the Diſſolution of Nature always follows it.

Reducible to this is *Baglivius* his Obſervation, " That if a copious and univerſal *Sweat*,
 " with an extream Weakneſs, comes upon
 " an obſtinate *Colick*, it denotes an approach-
 " ing *Palfy*; but when it comes upon a
 " *Loſſeneſs*, it cures and ſtops it, the Hu-
 " mors being tranſlated to the Habit of the
 " Body. And if one doth not ſweat upon
 " the Adminiſtration of proper Medicines to
 " provoke it, it will break out upon letting
 " of Blood, eſpecially if the Stop was ow-
 " ing to an over-bearing Croud of Humors,
 " and ſtiffing as 'twere in the Veſſels: For
 " when the vital Fire has more room allow'd
 " it, it is thereby rather blown up than ex-
 " ringuiſh'd, and then the *Serum* is thrown
 " out to the Cutaneous Glands.

The Reverse of *profuſe, long-continu'd*, and *colliquative Sweats*, are thoſe that are *ſhort* and *interrupted*, but in ſome Diſtempers equally *pernicious*. When the Humor to be ſeparated by *Sweat* hath gone ſeveral rounds with the circulating Blood, and thereupon is only partly concocted, rarified and render'd fluxible, the *Sweat* ſometimes appears, and then is *interrupted*; ſometimes 'tis very in-
 conſiderable, and then more copious all the Body over, or in this or that part, as it is diſſolv'd, ſeparated and ſtrain'd into the
 Glands

Glands and Pores of the Skin. But after all, this is but *partial*: and tho' there is nothing more uſual in *Intermitting Fevers*, and that *cum Euphoria*; yet, in thoſe that are more acute, it ſpeaks an extream *Lentor* and Viſcidity in the Humors, and Contraction or Obſtruction in the Cutaneous Glands, a languiſhing Motion of the Blood, and a vain Attempt of Nature, eſpecially if ſuch Sweats happen at a *critical* time.

That *Sweat* ſhould be *cold* (than which nothing is more *Omenous* in *Fevers* *) when at the ſame time, the Heat of the Skin is intense, is fairly accountable, if we conſider, that if the Humors be of that nature, that notwithſtanding the continual Flux of the Blood, only ſome of their Parts are attenuated, and ſome thin Liquor is ſtrain'd through the *Sudorifick Glands* after the uſual manner, or perſpir'd through the Cutaneous Pores, reſembling *Sweat*, which indeed tells us, that the Glands, theſe little *Tubes*, and Receptacle of the Humors, are ſufficiently open'd. But we are to obſerve, that if the Humors to be ſeparated this way, be not alſo concocted and ſubtiliz'd, they muſt lodge in the *Glands*, and the ſmall Portion of that which reſembles *Sweat*, muſt be cold, by reaſon of the great diſtance from the *Heart*, and almoſt without the Limits of *Circulation*. When the *Fever* is not of the acutest ſort, this *cold Sweat*, if it is likewise frequent and interrupted, ſignifies a lengthening of the Diſtemper; and that, after ſome time, the Humors, tho' yet groſs and viſcid, flow and inſuxible,

* Aph. 37.
S. 9.

influxible, may at last be attenuated to that Perfection, that may take it quite off; But such *Sweats* are always *unnatural*.

Again, when the Body is loaded with cold and thick Humors, which by the Arteries are carry'd into all the Parts, but by reason of their *Lentor* are not so readily derived into, or *flexible* in the Veins, where the impulsive Motion is weakest, especially in the extreame Parts, in which, when this cold and gross Humor is congested and naturally dissolved into *Sweat*, it must necessarily be *cold*, because the Humors are such. And if this *cold Sweat* be owing to no other Cause (for thus it happens in *Lethargick* Distempers) the *Symptom* is not so *dangerous* as in the cases but just now mentioned. But when it is owing to a Flagginess and Laxity of the Fibres, the case is *deplorable*. Thus also in *Fainting Fits*, a *cold Sweat* breaks out all over the Body, but especially about the Neck, Temples and Breast, and proceeds from an interrupted Circulation of the Blood; upon which the Parts become cold, and an aqueous Humor or Moisture, by reason of the Weakness, Flagginess and Laxity of the Parts rather than by straining or compression, appears upon the Skin; or, the perspirable Matter being now to break out, but wanting a due Heat to rarify its Parts, and carry it off after the usual manner, is form'd into a Liquor resembling *Sweat*.

'Tis pretended to foretel an *approaching Sweat* by *inspection* of the *Urine*, from *Hipp. Observ.* (a) namely, when *thin Urine* is follow'd

(a) Coac.
Prænot.

low'd by that which is more *groſs* and *thick*, becauſe the laſt being leſs watery, and containing a leſſer quantity of the liquid part than the firſt, this aqueous part muſt be tranſlated elſewhere, namely, into the Cutaneous Glands, as the ſolid part into the *Urine*. And becauſe the liquid part of *Urine* and *Sweat*, as well as their *Salts*, partake of the ſame Nature, 'tis not unreaſonably ſuppos'd, that *thick* and *groſs Urine* coming after that which was *thin*, may *preſage* an approaching *Sweat*. For there is nothing more obvious, than that the more of *Liquids* and *Salt* that's carry'd off by *Sweat*, the leſs goes by *Urine*, and conſequently is more thick and coherent.

There is no one but knows how dangerous it is, when one in a continual, or ſuch like *Fevers*, is a *sweating*, and at the ſame time is taken with *Horror* and *Shivering*: For ſuch *Sweats* tell us, that they are not only *partial* and *imperfect*, but alſo that the noxious Humors cannot be diſcuſſed *critically*. The like is to be ſaid of thoſe *Sweats*, which happen in the beginning of Diſeaſes, eſpecially in *malignant Fevers*, tho' accompany'd with other good *Signs*. For in theſe *Fevers* the Patient ſometimes *sweats* the firſt day, and the *Fever* ſeems to remit; but then, other worſe *Symptoms* appear, and after many ſuch *Sweats*, the Patient dies; for ſuch frequent *Sweats*, by which the Diſtemper is not mitigated, may always be ſuſpected to proceed from a waſting and conſumption of the Body.

But

(a) Sanct.
Aph. 47.
§. I.

But the less *Malignity* (to use that Term) there is in those *Fevers*, so much the more beneficial are the *Sweats*, as well as in all other *Fevers*, providing that after them the *Symptoms* are not worse: For by this manner of *sweating*, the Febrile Matter is rarefy'd and attenuated by degrees, and also carry'd off by *insensible Perspiration*, which upon this account, and in this case, as well as all others, ought never to be interrupted or diverted, according to the Excellent *Sanctorius* his Caution (a). For, as *Fevers* and most other Distempers are owing to an obstructed *Perspiration*, To is it one of the Ways, and the nearest too, that Nature hath contriv'd for the cure of them.

When the Orifices of the Cutaneous Glands, by long continued and *profuse Sweats*, are too much open'd, or by a vehement ejection of gross and crude Matter; there follows a Sense of *Weariness*; especially, if those Parts have been distended a long time, (for a long Distention of the Fibres deprives them of their *Elasticity*;) they recover their *Tone* and Continuity with great difficulty. This is also one of the Inconveniencies and Effects of *forc'd Sweats*. But there is yet another of more fatal and dangerous consequence, namely, when *Sweats* are untimely *provok'd* and *forc'd*, in *continual Fevers*, *Small Pox*, and other like Distempers; whereby a greater Inflammation is rais'd in the Blood, especially in those that are young, and of a hot Constitution: For they sweat with difficulty, and the more they endeavour to force Sweat by,

strong

strong Diaphoreticks, and other ways, so much the more are they in danger of falling into *Frenzies* or *Deliriums*: For, by the Accession of new Heat, the *Texture* of the Blood is dissolv'd, or stagnats in the Capillary Vessels of the Brain.

So that *Evacuations* by *Sweat* are to be attempted with the greatest caution, not indiscriminately by all Persons, nor at all times: For if Medicines to procure it be given when the Blood is of a *Texture* not open enough (which it cannot be near the beginning of most Feverish Distempers) or when too heterogeneous Substances abound in it, *forc'd Sweats* oftner dispose the Blood to stagnate in the tender Vessels of the Brain and Nerves, than to separate its noxious Particles at the design'd secretory Parts; and a more violent Motion being thereby raised in it, the Confusion of its Parts must be increased, and other Distempers more dangerous and more hardly to be remov'd, introduc'd.

I know that this ill Custom of *forcing* Sweats untimely, whether by inward Medicines or outward Application, so common now a-days (as I am satisfied that to this Method are owing many obstinate Distempers, which, by calming, instead of exagitating and inflaming the Blood already disturbed, would have gone off) are prescrib'd with an intent to render the Fluids of our Bodies the more fluxible and brisk in their Motion, whilst in the mean time the fibrous and solid Parts may be either naturally, or by reason of the Distemper, too much contracted:

tracted. But 'tis plain and obvious, that upon the adminiſtration of hot and ſpirituouſ Medicines, in the beginning of the Diſtemper, and while the Humors are crude and unconcocted, and unfit to be ſeparated, thoſe Parts are not only the more contracted, but their Fluid rendred impetuous, and remarkably more violent in its Motion: So that, by the *Niſus* of the one and Reſiſtance of the other, the *Viſcera* muſt be diſtended and diſtracted, and variously affected with Pains, *Deliria*, *Watching* and *Convulſions*.

Spontaneous Sweats therefore muſt be the ſafeſt, and more effectual for the cure of *Feveriſh* Diſtempers, than thoſe, that are prepoſterouſly forc'd and provok'd; which, as we have ſeen, inflames the Blood, exaſperates the Diſtemper, and expelleth the crude Humors any way; ſo that they not only fall upon the *Brain*, but alſo ſometimes upon the *Pleura* or Membrane that covers the Ribs, and thus becomes the cauſe of *Pleurifies*, and ſometimes they fall upon the *Lungs*, which occasions a *Peripneumonia*: Beſides that too great a quantity of *Serum* thus evacuated, muſt drain the Blood; and when its *Moſture*, wherewith it ought to have been diluted, is quite waſted, 'tis no wonder if the juſt now mentioned Inconveniencies and fatal Symptoms follow ſoon after. For we ſee how unſafe and prepoſterous it is to attempt the removing even of *Tertian* and *Quotidian* Agues by violent Diaphoretick Medicines, and the adminiſtration of the *Quinquina*, when they are new, *i. e.* almoſt of the nature

ture of *continual Fevers*. 'Tis true, as ſoon as the *Sweat* breaks out, Reſtleſneſs and other Symptoms vaniſh immediately: Yet it very often happens, that if the *Sweat* be forc'd more than it ſhould, the *Fever* which *intermitted*, terminates in a *continual* one, to the greater hazard of the Patient.

INSENSIBLE PERSPIRATION having been mentioned, as one of the Animal Excretions, might properly have fallen in to be conſidered here, if the Doctrine of it was not to be had in *Sanctorius* his excellent Book *de Statica Medicina*. But it may be adverted to, that if his excellent Obſervations were more generally known, and the ſolid Rules and Precepts of Health that may be drawn from them, better obſerv'd, we might hope to have the *Catalogue* of Diſeaſes either leſſen'd and ſunk in their number, or better known, and many of them cured with leſs expence of time, more eaſe and ſafety than now they are. Many are ſenſible of the direful Effects of an *obſtruded Perſpiration*, that don't know or conſider, that a free and regular one, is equally neceſſary with the other more ſenſible Evacuations, to the preſervation of the *Animal-Life*.

And tho' the ſubtile inſenſible *Effluvia*, that are diffuſ'd and fly from our Bodies, be only the Produce or Excrement of the third and laſt Concoction, or Rarefaction of that Liquor in the Cutaneous Glands, which are as 'twere ſo many *Viſcera* and Ventricles for concocting and making it *perſpirable*. Yet,

when theſe are obſtructed (which often happens) 'tis hardly credible how many ways the Animal Functions are thereby interrupted and rendred deficient : For when that which ſhould have been perſpir'd, is ſhut up and incloſed, the Excretory Duſts muſt be diſtended, the Capillary Veſſels ſtraitned, the Blood augmented and inflamed, and its Channels embowlden'd ; and if it be not taken off by *ſpontaneous Sweats* and *Urine*, &c. Diſeaſes are inevitable : For the *perſpirable Matter*, if lodg'd a long time in the Veſſels, muſt either inflame the Blood, or clog it in its Circulation, or coagulate, putrify and corrupt it, and at laſt be the productive Cauſe of *Fevers*, *Apoſtoms*, *Catarrhs*, *Eryſipelatoſe* and *malignant Fevers*. All which are not only prevented, but often cured by a due and regular *Perspiration*, which takes off a greater quantity of *Morbifick Matter in dato tempore* (a), with reſpect to its *Ponderoſity*, than any other Evacuation whatſoever. So that Diſeaſes *intra Animal* owing their Riſe to the want of it, by augmenting the quantity of the Blood in its Veſſels, are taken off in leſs time by *inſenſible Perspiration*, than by the more *ſenſible Excretions*.

(a) Sanct.
Aph. 59.
§ 7.

'Twere endleſs to rehearſe the many and different Cauſes of an *obſtructed Perspiration*, only we may take notice of a few among others here and there accounted for by that Ingenious Author, and they are theſe, namely, *Pains*, *hard Labour*, *Paſſions of the Mind*, *Cold*, *Reſtleſneſs*, *purgative Medicines*, *Looſeneſs*, *Vomiting*, *too many Clothes*, *profuſe*

profuse and unseasonable Bleeding, strong feeding, especially in the Morning, immoderate Watchings, damp and moist Air, swimming in cold Water, gross and viscous Food, want of exercising the Body and Mind, and Abstinence from Venery in those of a brisk and strong Constitution.

Thus we have seen how many and different ways a Human Body is freed and disengag'd from its Impurity, Excretions, and those Humors that are *heterogenous* to, and inconsistent with its *Oeconomy*, especially in the Attacks of *Acute* Distempers, whose Course is swift, nice, and dangerous, if compar'd with those that are more *Chronical*, the Impressions of which not being so sharp, or commonly attended with such fatal *Events*, tho' of a longer standing and continuance.

There is yet *another*, different in its nature from all the former, in being a Disorder of the *Great Spring* of the *Machine*, or a Raging and Ebullition of the *Blood* or *Vital Stream*, by which it leaves its proper Channels, and breaks out on a sudden, and *impetuously*, at the Nose, Hæmorrhoids, and other places. This active Liquor of the Veins and Arteries, hath been often cool'd and check'd in its impetuous Motion by this *spontaneous Eruption*, to the recovery of the Patient. Hence it is, that in imitation of Nature, *Physicians* in all Ages have been taught to open the Veins, not daring to trust to or confide in its own management, in those Distempers that are commonly called *Acute*, as raging *Fevers*, and *Inflammations* of the
K 3
Viscera,

Viscera, &c. chiefly, becauſe all *ſpontaneous* and natural *Hæmorrhages*, have not been attended with a happy and fortunate *Event*, many of them having been only Forerunners to certain *Death*.

Thus, a few Drops of blackiſh colour'd Blood iſſuing from the Noſtrils in continual Fevers, accompany'd with a cold Sweat, livid and black Excrements or Stools, is a *per-nicious Sign*, as was above obſerv'd; neither doth it deſerve a *better Prognostick*, when this manner of bleeding at Noſe happens in other Diſtempers, if it is inconfiſtent with the Nature of the Diſeaſe, the Conſtitution of the Patient and of the Air, the Seaſon of the Year, and manner of living, and Diſeaſes that have their riſe from Phlegm, and the like. For ſuch Diſtillations of *Blood*, eſpecially if it be *blackiſh* and *dark-coloured*, either denotes a *Plethory* of it in the *Brain*, or a *Lentor* and *Coagulation* in its Capillary Veſſels or adjacent Channels. By ſome it hath been ſuppos'd to be a latent Sign of *Worms*, when it happens in continual Fevers; but nothing of this can be affirmed for certain. Only it may be noted, that *Bleeding at Noſe* ſeldom or never ſucceeds well in Spotted Fevers, eſpecially when attended with many grievous *Symptoms*.

It likewiſe deſerves to be obſerv'd, that if a few Drops of *Blood* come from the Noſe on the fourth Day of the *Fever*, and the Patient hath been *sneezing* ſome time before, and the Sediment of his *Urine* is white; this *Hæmorrhage* is far from being a dangerous Sign;

Sign ; Because, ſometimes the *Capillary Arteries*, which are diſtributed to the internal Part of the Noſe, may be broke by the Violence and Concuffion of *Sneezing*, and therefore this *Bleeding at Noſe*, cannot be reckoned among the *Symptoms* of the *Fever*.

We have therefore reaſon to believe, that, there is leaſt Danger in *Eruptions of Blood* at Noſe in Fevers, when it is *Plentiſul* and *Copious*. For, when the Parts of the Blood are rarified, its *Niſus* upon its Channels is the greater, which, when the *Capillary Arteries* cannot reſiſt, they muſt be broke at laſt, and thus give way to the more powerful Motion of the Blood ; and thus ſometimes contribute to the Recovery of the Patient, in cooling and calming the remaining Part of the Blood in the Veins, and promoting *inſenſible Perſpiration*. providing the *Hæmorrhage* be not *Profuſe* and *Immoderate*. For, in this Caſe, the *Event* muſt be *fatal*. So that *Bleeding at the Noſe* is never accounted a *good Sign*, unleſs it give eaſe to the Sick, take off *Thiſt* and other Symptoms of the *Fever*, or at leaſt mitigate them, and render the *Pulſe* ſtronger, more brisk and equal.

To inquire into the *State* of the *Blood* in the Diſorders of Sickneſs, and what's *portended* by it, may ſeem to belong to another Province ; namely, the *Diagnostick* and practical part of *Phyſick*, nothing being more neceſſary to accompliſh the Cure of moſt Diſtempers; eſpecially thoſe that are *Feveriſh*, than to conſider the Blood in all its Circumſtances and Accidents, as its Co-

lour and Conſiſtance, and whether it is too thin, rapid and inflammable, or too thick, viſcous, roapy, apt to congeal and ſtagnate, and if it be of too bright a Red, and loaded with plenty of volatile and inflammable Parts, or of a Terreſtrious and blakiſh Colour, &c.

But it may not be much beſides the preſent purpoſe, to take notice of ſome Obſervations, that have commonly been made concerning the *Blood* taken from the *Veins*, and what is *preſaged* by it. Firſt then, it hath been obſerved, that,

In Inflammations of the internal Parts, eſpecially in *Pleurifies*, the *Blood* taken from the *Veins*, has a *white Cruſt* or Gelly upon its *Surface*, which ſeems to be the Nutritive Chylous Part of the Blood, diſingag'd from its Maſs, and gathered into this *Cruſt*, by the exceſſive heat of the Blood, overſtocked with volatile Particles. That the Blood of *Heſtick* Perſons, is of a *bright red* Colour, and doth not eaſily *congeal*, and at the ſame time, they are lean, watchful, peeviſh, &c. from whence 'tis inferr'd, that there is a Redundancy of Humours in their Fluids. That the *Blood* of thoſe in *Malignant* and *Peſſilential Fevers*, if it appear Pure and Natural, is a moſt dangerous *Sign*, and ſpeaks more of *Malignancy* to be lodg'd in the Veins neareſt to the Heart, than can be brought forth by Blood letting. And that the Blood drawn from the Veins before the Eruption of the *Small-Pox*, having the fore mentioned *Cruſt* on its *Surface*, denotes, that the *Small-Pox*

Pox will be very Numerous and Dangerous.

But, besides these more than common Remarks upon the *Blood*, 'tis usual with some in opening a Vein, to observe its various force, the Degrees of *Heat*, the *Colour* and Changes that happen to it, the proportion of the *Grumous* part of the *Blood*, compared with its *Serum* and *Colour* of both, and especially, to contemplate its *Scum* and *Froath*, and to form their *Auguries* and *Predictions* accordingly; which nevertheless, are founded upon uncertain *Theories*, long since exploded. For,

Besides, that the very Contemplation of those *Appearances* impose upon our *Senses*, and therefore the Conclusions taken from them must be doubtful and uncertain. The *impetus* of the *Blood* in issuing from the Vein, may be owing to the vigour or fainting State of the *Mind*, as well as the largeness or straitness of the Wound made by the Lancer, and the time that intervenes between the incision of the Vein and binding up the Arm. For, the longer the time is, the *Blood* issues forth with the greater *Violence*, and the first *Impetus*, that is, before the Vein be a little emptied, is *brisk* and *Rapid*. But in a little time it becomes more *Weak* and *Languishing*, unless the contrary happen, that is, the Patient through fear or fainting, hardly bloods one drop in the Beginning, but after Recovery, the *Blood* issues forth in a large and plentiful Stream.

Again,

Again, an enquiry into the *Heat* of the *Blood* by the *Touch*, is no leſs precarious and uncertain, being, that it may have this or that *Degree* of *Heat*, according to the *Conſtitution* of the *Patient*, the *Paſſions* of his *Mind*, and *Spirituous Liquors* taken before or after the *Operation*.

Neither can it be known whiſt the *Blood* comes from the *Veins*, whether it be *Good* or *Bad*, or whether that which comes firſt be *Pure* and *Sincere*, and that which comes afterward *Impure* and *Corrupted*, and *contra*. For, ſuch a diſparity in the *Blood* while it gulleth out with *Rapidity* can hardly be obſerved by the niceſt *Eye*, unleſs its *Colour* be manifeſtly different from that which is natural; that is, that it reſembles *Cream* or *Chyle*. And the *Appearance* of one ſort of *Blood* coming in the beginning, and another ſort in the *Progreſs*, is meerly accidental, and the *Obſervations* made upon both; namely, that the firſt ſort of *Blood* being followed by that which is *impure* and *corrupted*, ſignifies *malignant Humors* in the *Viſcera* or any inflam'd *Part*, and that *pure* and *good Blood* coming after that which is *bad*, a total *Exterpation* of the vitious *Humor*, is falſe and uncertain. For, this *Change* is owing to contingent and uncertain *Appearances*, and the *Obſervations* made concerning it, repugnant and contrary to the *Laws* of *Circulation*, the internal *Inflammations* of the *Pleura* and *Lungs* excepted, in which Caſes the diſparity of the flowing *Blood* is very remarkable. But after all, the *Inflammation* is

not always immediately, or ſome time after taken off by drawing forth ſuch Blood; neither are the Symptoms mitigated, which neceſſarily ſhould be, if the Blood cauſing the Inflammation were Evacuated. And 'tis uncertain whether all the grumous and impacted Blood be drawn off from the Interſtices of the Fibres of the inflam'd Part; or, whether *good Blood*, coming after that which is *bad*, more of *this* be not yet remaining.

And no leſs uncertain are the Obſervations that are made upon the *Livid*, *Whitiſh* and *Yellow Cruſt* upon the *Surface* of the Blood, it being rather a crude indigeſted *Chyle*, intimately mixed with the Blood (for, it inflames being put to the Fire) than a Pituitous or Phlegmatick Excrement. And 'tis not to be doubted that this *Gelly* is the morbiſick Matter of a great many Diſtempers; eſpecially, *Pleurifies* and *Rheumatifms* which are always accompanied with a Heat in the Blood, and a viſcous thickneſs in its *Serum*. So that 'tis ſtrange, any ſhould think that this *Cruſt*, is only to be obſerv'd in the Blood of thoſe of a cold Conſtitution, it being ſo commonly and frequently obſerved in the *Acuteſt Fevers*, and therefore is ſo far from ſignifying a Phlegmatick Crudity, that 'tis rather the Produce of an *Exceſſive Heat*.

Laſtly, We are not to look upon the *bright rediſh Colour* of *congeal'd Blood*, to be always a *Sign* of Recovery, or of ſound Health, or that which is *Party Coloured* and interſpers'd

ſpers'd with Spots of a *livid* and *blackiſh* Colour to be fatal and *Omenous*. For the Blood of thoſe in a Mortal Fever and dying State, hath often^m been obſerved to be *bright* and *rediſh* in its Colour, and thoſe to have eſcaped and recovered, whoſe Blood hath been *Party Coloured*. And 'tis as plain as certain, that the *Blood* immediately taken from the *Vein*, is not *Flame-Coloured*, nor becomes ſuch but by the influence of the *Air*; neither is it of this Colour all over, and in the *Middle*, but only on its *Surface*, which is hardly a Hairs-breadth. For in the *Middle* as every one knoweth it is *Blackiſh-Coloured*, and when cut and expoſ'd to the *Air*, in due time, 'tis colour'd like the *Surface*. Neither is the extraordinary *Texture* of the Blood and *Serum* reſembling *Milk*, always to be accounted the moſt Dangerous and Mortal Sign: For, in the Progreſs of the Diſtemper, this ſort of Blood is changed into a more natural Colour. So that 'tis plain what a due Caution and Circumſpection is requiſite, not only with reſpect to Blood-letting, but alſo to the Adminiſtration of Medicines upon its *Appearances*, and forming *Auguries* concerning it.

C H A P. XI.

*Of Prognoſticks taken from Reſpiration
and manner of Breathing.*

Nothing is more conducive to form juſt Predictions or Auguries concerning Diſeaſes, than to know the Weakneſs and Strength of the Patient. If *Nature* is ſtrong and vigorous, one cannot die, ſays *Galen*, than which nothing is more true, with reſpect to ſome Diſtempers. But the Power and Strength of *Nature* is beſt known by its Actions, and the exerting of its uſual Functions, a due Circulation of the Blood, Secretion of Humours, and Generation of the Liquid called *Animal Spirits*; all which, depending upon Motion, muſt be performed by the Organs that *Nature* (which is never wanting in what is neceſſary to its Deſigns,) hath appointed.

This in nothing is more Notorious than in *Reſpiration*, by which the *Air* comes into our Breasts by the Mouth and Noſe, but makes no long ſtay there, being again e-jected or preſſed forth, and we ſupplied with more freſh *Air*. The Dilatation and Compression of the Breast is obvious, and that this Motion is ſucceſſively continued, allowing ſome *Pause* between *Inſpiration* and *Reſpiration*, and that 'tis in our Power
to

to alter this *Viciſſitude* as to *ſlowneſs* or *frequency*; but, that of neceſſity we muſt breathe. For, if Breathing be altogether interrupted, *Suffocation* and *Death*, muſt needs follow.

But, as *Reſpiration* thus in *General*, is abſolutely neceſſary to the preſervation of Life, 'tis no leſs ſuch for promoting the *Motions* and *Functions* of Humane Body in *particular*, and one of its *Primary Uſes* (of which the promoting of the *Circulation* of the *Blood*, by the conſtant Motion of the *Diaphragma*, *Intercosſtals* and *Muſcles* of the *Breaſt*, is undoubtedly the *Principal*) ſeems to be that of refining and attenuating the *Blood* in the *Pulmonary Veſſels*, before it paſſes into the *Pulmonary Vein*, and thence into the left *Ventricle* of the *Heart*. For,

The *Blood* in its circulating Motion, muſt undergo a *Thouſand Changes* and *Alterations*, not only in ſeparating part of its *Subſtance* for *Nutrition* and *Muſcular Motions*, but chiefly in receiving *Heterogeneous* and *Excrementitious* *Particles*, by the *Acceſſion* and *Addition* of New *Chyle* from the *Thorack* and *Lymphatick Duſts*, which, meeting in the right *Ventricle* of the *Heart*, fills it with that whitish and *Chilous* *Liquor*, which, according to frequent *Experiments* we ſee in *Dogs* diſſected ſome *Hours* after being fed : So that the *Blood* in the right *Ventricle*, paſſing into the *Pulmonary Artery*, is *mixed* and *impure* with reſpect to its *Quality* and *Conſiſtance*, and muſt needs be divided, attenuated, and ſubtiliz'd, and its *Grumous* and *Glutenous* *Parts* rendred more *fluxible*

fluxible in paſſing through the Pulmonary Channels to the left Ventricle, and thence into the great Arterie. That thus the new Chyle, or whatever is *Heterogeneous* to the Blood, ſhould be attenuated and refined in the *Pulmonary Veſſels*, and brought to a perfect *Craſis* and Diſpoſition, ſeems to be very plain from the *Structure* of the *Lungs*, and their Motion in *Reſpiration*. For, their *Lobes* being branch'd out into innumerable Capillary Channels, through which the Blood muſt paſs, its Parts muſt neceſſarily be bruifed, preſſed upon and divided; and thus rendred the more *fluxible*, through the Capillary Veſſels, all the Body over, and adapted to be deriv'd from the *Arteries* into the *Veins*, and from the Capillary ones of the laſt into their greater Channels.

And as *Reſpiration* (not to mention its other Uſes, or attempt to account for its *Mechanical* and moving Cauſe) contributes to prepare and bring the Blood to its natural and determinated *Craſis* or Conſtitution for the Duties of Circulation; ſo on the other hand, when the Blood is purified, unmix'd and fluent in the Pulmonary Channels, *Reſpiration* is promoted, made *Easy* and *Natural*, and thus becomes one of the neceſſary Conditions without which it cannot be either.

But beſides this due *Conſtitution* of the Blood that's requiſite to a natural and *easy* *Reſpiration*, there are others no leſs neceſſary; namely, a liberal *Flux* of Animal Spirits into the Intercoſtal and *Muſcles* of the *Breaſt*, (notwithſtanding they want *Antagoniſts*)
For,

For, in *Inſpiration*, the *Air*, by reaſon of its *Elaſticity*, inſinuating it ſelf into the Cavity of the *Breaſt*, dilates and fills it; where- by thoſe *Muſcles* being contracted more than uſually, muſt, by reaſon of the *Elaſticity* of their *Fibres*, recover their former State, and partly, at leaſt, contribute to the Ejection of and preſſing out the *inſpired Air*, which, without an *influx* of *Spirits* could not be effected. 2dly, A due conformation of the *Breaſt* and its Cavity. 3dly, That of the *Lungs*; and, Laſtly, A well conſtituted *Air*.

Theſe being the Conditions that are abſolutely neceſſary to an *eaſy* and natural *Reſpiration*, 'tis readily conceivable; that, if one or all of them be wanting, one cannot *breathe* but with *difficulty*; But the *Modus* and *Causes* of an *uneaſy Reſpiration*, being ſo various and almoſt innumerable, being, that every one of its *Organs* may a Thouſand ways be vitiated; it will be proper to ſuperſede the recital of them, and confine the following *Observations* to that which is owing to a Deſect in the *Lungs*, that is, the *Aſpera Arteria*, or *Wind-Pipe*, and the ſeveral parts of it, the Subſtance of the *Lungs* and *Blood Veſſels* that are in it; and that with reſpect to *Fevers*, and ſuch like acute Diſtempers.

An *uneaſy* or different *Reſpiration* as every one knoweth, is of three ſorts, which nevertheless differ one from t'other only in Degrees. Thus, A *Dyspnæa* is little different from a natural *Reſpiration*, only 'tis more quick

quick and *low*, or *loud* than usual, without a *Fever* *snorting* and *hissing*. An *Asthma* is yet more uneasy, the *Respiration* *quicker*, with *snorting* and *hissing*, but not accompanied with a *Fever*. Neither is an *Orthopnea* accompanied with a *Fever*; but the difficulty of *Breathing*, is yet greater than in the former sorts, being *lower*, *quicker*, or more *slow*, so that one cannot *breath* without having his Body set upright.

Now the Causes of an uneasy and difficult *Respiration*, and the fore-mentioned differences of it, may probably be these; namely, that in the first sort, there is a greater than usual *afflux* of Spirits into the Muscles of the Breast and Ribs (if it be allow'd that these are not meerly passive in *Respiration*) by which, the Motions of *Breathing* are rendered more *frequent* and *loud*: For we see one breaths after this manner of his own accord, with an intent to have some Ease thereby. Again, an *Asthma*, in which the *Respiration* is more difficult than in the former, is occasioned by whatever can obstruct the *expansion* of the *Lungs*, either by straitning or pressing upon them. The same is owing to a pressure upon the *Wind-Pipe*, or whatever *liquid* or *solid* that may happen to stuff or fill up its Cavity, or render it narrower than is usual. To this must be ascribed the *hissing* and *snorting* that's observable in those affected with this Distemper. For, the narrowness of the *Wind-Pipe* in obstructing the Entrance or Admission of the *Air* into the *Lungs*, must necessarily be the

L Cause

cause of this *Appearance*. Hence it is, that in an *Orthopnea* one must sit upright, that the *Air* may pass the more easily into the *Aspera Arteria* and *Lungs*, in which Posture only he can breath a little, *that* being press'd upon from without, or straiten'd within by *Tumors*, &c. Add to this, too thick, cold, moist and dry *Air*, by which also the *Expansion* of the *Lungs* is obstructed, and by the *Blood*, when it is too thick, viscid, hot, fervent, violent in its Motion, and when the *Vessels* of the *Lungs* are impacted with Dust, Stones, cold and viscid Humors, thicken'd *Lymph*, and stagnated Blood, &c.

And here we are to observe, that tho' all these Degrees of a difficult and *uneasy Respiration* may happen to be without any *Fever*; yet every of them may be accompany'd with it, according to the Nature of the Distempers to which the Difficulty of *Breathing* is owing. Nay, it often happens, that an *uneasy Breathing* is productive of a *Fever*. Thus, for example, when the *Lungs* are straiten'd or pressed upon, and thereby a *Peripneumonia* induc'd, the Difficulty of *Breathing* that follows upon it occasions a *Fever*, which is always accompany'd with an Inflammation in the *Lungs*. We are likewise to take notice, that Difficulty of *Breathing* is either *Idiopathetical* or *Sympathetical*, i. e. an essential or primary Distemper, or caused by consent; and that the first may be continual, and without interruption, if it is merely owing to an Indisposition of the *Lungs*, and also the second, if its Cause be continual.

But

But if it affects the *Lungs* periodically, and by way of *Paroxysm*, the *Asthma*, &c. must be *sympathetical* and *periodical*; and an *essential Asthma* may be likewise *periodical*, as often as the Cause to which it is owing, is at certain times taken off and mitigated.

This being premis'd in pursuance of our purpos'd Design of enquiring what's *presag'd* and *pretended* by the various Appearances of *Respiration*; it will in the first place be granted, that (whatever the Distemper be) when *Respiration* is easy, and little different from that which is natural, there is nothing more encouraging to the *Physician*, or promising to the *Patient*; inasmuch that it tells us, that the *Heart* and *Lungs*, the *Diaphragma* and *Pleura*, the *Muscles* of the *Breast* and *Ribs* are sound and unaffected. But in *Feverish* Distempers, we must be aware, that their *Malignancy* do not impose upon us: For, in such, the *Respiration*, *Urine*, and *Pulse*, as was above observ'd, often resemble that of one in Health.

Sometimes the *Respiration* is *loud* and *quick*, in which state much *Air* is often inspir'd and expir'd at Mouth and Nose very hot and fervent. This manner of *Breathing* may be commonly observed at the beginning of hot and continual *Fevers*, Invasion of the Small Pox, and *Peripneumonick* Distempers. For, in the first of these, *Respiration* comes to be so uneasy and difficult, by reason of the unusual quantity of hot and fervent Blood running through the Vessels of the *Lungs*, where its Parts are rarefied, and press so much upon

the ſides of their Channels, that they muſt be continually *expanded* and *diſtended*, and their *Niſus* to recover their firſt ſtate, overpower'd and rendred ineffectual. Hence it is, that in this caſe, to be eas'd and reſreſh'd, and to mitigate the Heat, and take off the *Tenſion* of the Veſſels, one fetcheth his *Breath* ſo often, and the *Reſpiration* is ſo *quick*, and alſo *loud* and *great*; chiefly, becauſe the *Blood* being yet brisk and ſpirituouſ, and not impoveriſh'd by the continuity of the *Fever*, there is an unuſual *Afflux* of Animal Spirits into the *Muſcles* of the *Breaſt* and *Diaphragma*, &c. and thereupon are the more contracted, and the *Cavity* of the *Breaſt* enlarg'd, and the Sick blows and pants after *freſh Air* for mitigating his inward Heat and ſenſe of his Pain, cauſed by the Preſſure of *Blood* upon his *Lungs*.

Neither is this *manner* of *Breathing*, in the juſt mention'd, or any other ſort of *Fever*, accounted one of the moſt dangerous *Signs*, while the *Fever* is *new*, and the *Blood*, as we ſaid, brisk and ſpirituouſ, and Nature ſtrong and vigorous, at leaſt not much impaired and weaken'd. But here 'tis to be noted, that a large *Dilatation* of the Region of the *Breaſt*, is not always to be taken for a *loud Breathing*; for this often happens to thoſe whoſe *Cheſts* are narrow, or are affected with ſome inward *Tumor*, in which caſes, the quantity of *inſpir'd Air* is very inconfiderable.

And as to *Pulmonary* Diſtempers, 'tis as plain as 'tis certain, that upon the firſt invaſion of them, the Inflammation is inconfide-

rable;

able, and the *Lungs* may yet in ſome meaſure be *expanded*, notwithstanding the *Stimulus*, Pain, and Heat, wherewith they are affected; and therefore the *Respiration* may be *loud* and *frequent*, for the Reaſons juſt now alledged. But in the progreſs of thoſe Diſeaſes, the *Stimulus* and Pain, the Inflammation and *Tumor*, encreaſe by degrees, and harden the *Lungs*, and render them unfit to be *expanded*; ſo that the *Respiration* becomes *low* and *quick*, than which there is no *Sign* more *fatal*, not only in this, but alſo in other *Acute* and *Feveriſh* Diſtempers: For now the *Lungs*, through which the Blood ſhould often circulate in a little ſpace of time, are ſtuff'd and impacted; and therefore whatever is leſs *fluxible* in this Liquor, muſt ſtagnate in the *Pulmonary Veſſels*, whiſt that which is more *thin*, goes ſome *rounds* in *Circulation*, till it be quite ſpent, and the Sick breathes no more.

Respiration that's *low* and *ſlow*, is common and ordinary to thoſe in a *Delirium* (a), and (a) Hipp. 1. a *Difficulty* of *Breathing* in that Diſtemper prog. 24. is mortal (b); eſpecially when the *Diaphragma*, one of the Inſtruments of *Respiration*, is (b) Aph. ſo. §. 4. inflamed, and therefore cannot be *contracted*; ſo that the Cavity and Motion of the Breſt muſt be leſſer than is uſual, and conſequently the *Respiration* *low*. And when the Diſtemper has continued a long time, beſides the *Inflammation*, there muſt be a great expence of *Spirits*, without which the Motions of the Breſt cannot be exerted; and therefore the *Breathing* muſt likewise be *ſlow*, ſometimes

* Aph. 68. *interrupted and doubled (i. e. convulſive *)*
 S. 4. and accompany'd with Groaning, Sighing,
 Expanſion and Motion of the *Noſtrils*.

This *low and ſlow Reſpiration*, thus deſcribed, is deſervedly called the *Cold Breath*; and tho it be hardly observable, yet 'tis moſt manifeſt in the Motions and Heavings of the *Shoulder-blades* and *Breſt*, that the *Bed-clothes* are ſenſibly liſted up, and the *Noſtrils* dilated, while there is little or no *Reſpiration*, and in a little time none at all. Thus ends the *Animal Life*.

The appearance of *Suffocation* in *Hysterick Fits*, is yet a *Problem*. In this Diſtemper, *Reſpiration* is not only vitiated, but ſometimes altogether *interrupted* with Coldneſs all over the *Body*, with an Interception of the *Voice* and Intermiſſion of the *Pulſe*, want of *Senſe* and *Motion*, that thoſe that have been thus affected, have been taken for dead, and dreſſed for Interment. Now tho it ſhould be granted that this *Difficulty of Breathing* were owing to *Narcotick Flatuſ's*, ariſing from the *Abdomen* ſtraightening the *Diaphragma* and *Lungs*, as happens in a flatulent *Aſthma*; or, that the ſtrangling and compreſſion of the *Throat* ſhould proceed from poiſonous and malignant Vapours, as

(a) Lib. de
 Nat. Multi-
 ebr.

(b) Lib. 6.
 Pathol.

cap. 16.

(c) Lib. 2.

Pract. cap.

§ 1.

ſome are pleaſed to affirm; (for as to the riſing of the *Uterus* like a little *Globe* or *Ball*, another cauſe of this Appearance aſſign'd by *Hippocrates* (a), *Fernelius* (b), *Eucapius* (c), *Rudius* (c), and others, is inconfiſtent with *Anatomy*) or if we ſhould allow it to proceed from a *Confuſion* of the *Spirits* hurried

ried diſproportionally upon this or t'other Part, cauſing Convulſions and Pains, &c. according to *Sydenham*, but contrary to the Laws of *Animal Oeconomy*; yet ſtill the Difficulty remains, how one can live ſo long a time without any apparent *Reſpiration*, and under the deadly *Symptoms* juſt mentioned.

'Tis true, that the *Muſcles* that ſerve for the Motion of thoſe Parts where is leaſt reſiſtance, for moſt part want *Antagoniſts*; of which ſort are thoſe of the *Breaſt* and of the *Heart*, into which, however more or leſs the Flux of the Animal Spirits is obſtructed, the Motions of the Heart and Breaſt muſt be more or leſs *weak* or *ſtrong*, and conſequently the *Reſpiration* more or leſs vitiated. But if there be a *total Obſtruction* of Spirits, there can be no *Reſpiration* at all; and ſo long only we can live without *Reſpiration*, as without the Motion and *Circulation* of the *Blood*, and that's a very inconfiderable time: For when the *Muſcles* of the Breaſt are but a little contracted, its Cavity muſt be the leſs, and the quantity of *Air*, and that of the Blood admitted into the *Lungs*, proportionable; but when the Portion of *Air* is ſo little, that it is ineffectual for promoting the Motion of this inconfiderable Portion of Blood through the Capillary Channels of the *Lungs*, there it muſt ſtagnate, and there is no more Circulation. But after all, this *Appearance* is fairly accounted for by the Learned Doctor *Pitcairn* (a). (a) Diſſert.
de cauſis,
&c.

C H A P. XII.

*Of Prognosticks taken from Convulsions,
Privation of Speech, and Alterations
of the Voice.*

THat this frightful Distemper is an involuntary *Contraction* of the *Muscles*, by which the Parts affected are determined to a constant and unmoveable Posture, whilst the *Mind* and *Senses* are intire, is very obvious, and that *Convulsive Motions*, or *Epileptick Fits* (for they are distinguished from a true *Convulsion*) are likewise owing to an involuntary *Contraction* of the Muscular Parts, but oftner accompany'd with a Failure of the *Mind* and *Senses*. But tho' both be ascribed to the same Cause, the difference between them is remarkable in this, that a *true Convulsion* is a continual and *uninterrupted Contraction* of the *Muscles*, and that *Convulsive Motions* are *alternate*, interrupted and invading at certain times, and *periodically* accompany'd with an Interception or Privation of all the *Senses* external and internal, a sudden falling down, with gnashing of Teeth, and concussion of some of the Parts, swollen Eyes, strangling in the Throat, and difficult Breathing, an involuntary Excretion of Filth and Urine, foaming at Mouth,

Mouth, at the end of the Paroxiſm, and a forgetfulneſs of every thing that happened.

Now as to the firſt of theſe; namely, the appearance of a *true Convulſion*, which only comes to be here conſidered; 'Tis plain, that when a greater than uſual quantity of *Spirits*, are involuntarily determined into this or that Muſcle (be the Cauſe what it will) it muſt needs be contracted and contained in this Poſture by the Power of the *Liquid*; becauſe, the *Will* is not in a Capacity to make the requiſite *Æquilibrium* by actuating the *Antagoniſt Muſcle*, and therefore the place affected muſt be perpetually immoveable and inflexible.

But to what this irregular Motion of the *Spirits*, and the Effects of it is to be aſcribed, ſeems to be not ſo plain, by reaſon of the different Accounts we have of it, occaſioned perhaps by the miſtaken Senſe of that remarkable *Text*, *Convulſio vel a repletionē ſit vel ab inanitione, ita vero & ſingultus* (a). For, *Galen* apprehending this to be meant with reſpect to the Nerves only, has probably given riſe to the different Opinions that are had concerning the immediate cauſe of *Convulſions*. Whereas there is nothing more certain than that *Hippocrates's* Senſe of this *Text*, implies a *Repletion* or *Emptineſs* and draining of the Sanguiferous, and other Veſſels of the Body, from which that of the Nerves, as well as other Conſequences of it, that is, all ſorts of *Convulſions*, naturally reſults. This is very plain from the infinite number of Obſervations which we owe to this

(a) Aph.
39. § 6.

this *Great Man*, concerning this Distemper, he having with unwearied Patience and Diligence in tracing the Foot-steps of Nature, carryed them farther than any that went before him, or yet has come after. Neither was it unknown to him, that *Convulsions* were sometimes caused by a *Stimulus* of the *Nerves*; but withal, as a Mediate and remote Cause only, *i. e.* an afflux of a greater than usual Quantity of Animal Spirits into the Part affected, so that whatever the *Stimulus* be, by which a *Convulsion* is produc'd, it must imply and be reducible to *Repletion*.

Retaining then to the antient Account of *Convulsive* Distempers, as caused by an Universal *Repletion* or *Emptiness*, and draining of the Vessels, and consequently those of the Nerves and Muscles, 'twere no hard Matter (if it were not besides our purpose) to account for the various Sorts and *Appearances* of *Convulsions*, from the excellent Observations of the *Great Bellinus*. May it be allow'd only to observe, that, *Convulsions* must be the necessary and natural Effect and Produce of an excessive *Repletion* and *Emptiness*, *Humidity* and *Dryness* of the Parts so affected.

Thus, for Instance, When the Body is drain'd by some excessive *Evacuation*, as *Blood-letting*, *Hæmorrhages*, *Purgative Medicines*, *Diarrheas*, *Dysenteries*, and the like, the Vessels thereupon become empty and drie, and their sides fall together, and come nearer one to the other; so that the remain-

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ing part of the Liquids; especially the Blood and Spirits separated from it, must be altered and chang'd from their Natural State, by which the Nerves are shrunk, contracted and shorten'd (however this Doctrine be reject-
ed by the Learned *Borrellus*; (a) chiefly be-
cause, *says he*, the Nerves in a living Body
have never been observed to be dried and
withered, and that *Convulsions* cannot be a-
scribed to *Repletion* of them, or an excessive
Moisture and Humidity, because 'tis their
Natural Constitution) and *Convulsions*
brought upon the Part; especially, when
this dryness of the Nerves is accompanied
with an unusual Heat; for, then the *Spirits*
are the more inflamed and active, and the
Convulsion or *Contraction* the greater.

(a) Cap.
xx. prop.
212. par. 2.

But on the other hand, *Convulsions* are
sometimes owing to an unusual *repletion* or
fulness of the Sanguiferous and other Vessels;
so that their Liquids being ouz'd, or other-
ways insinuated into the Interstices of the
Fibres which constitute the Nerves; these
are forthwith rendred flabby and relax'd,
shortned and contracted, by the stuffage of
moist and watry Parts entring their little Ca-
vities; probably after the same manner,
that Cords or Strings of Musical Instruments
are affected by the insinuating Particles of
moist Air and rainy Weather. Thus the Fi-
brous and Nervous Parts, are equally con-
tracted by too much *Humidity* as well as by
excessive Dryness.

And

And reducible to this, are those *Convulsions* which are caused by gross, viscid, cold, and Phlegmatick Humors in the Blood; from which, no Spirits can be separated, but such as are sluggish and unactive, and therefore readily stagnate or cling to the Nerves, by which, these are in a manner swelled and contracted, and must continue to be so, especially when the finer Part of the Blood being rarified, expires, and the grosser Parts together with gross Viscid and cold Humours, are detained in the Fibres. *Convulsions* that are owing to this Cause, and those occasioned by a *Laxity* of the *Fibres* after some time, terminate in *Palsies*.

Thus we have seen, after what manner *Convulsions* are sometimes caused by a *Plethora*, and sometimes by an *Emptiness* of the Vessels or Liquids contain'd in them. But, it yet remains to be observed, that there are some sorts of this Distemper; which, tho' they seem to be rather owing to some other than the just mentioned Causes, are nevertheless reducible to the one or t'other. Such as are those that are caused by a *hardness* and *thickness*, or Compression, and unnatural Conformation of the *Fibres* and the like, by which these are rendred unfit for Muscular Motion. And 'tis likewise to be observed, that, a *Convulsion* or *Contraction* of one *Muscle*, is often caused by a Relaxation or *Palsie* in its *Antagonist*, become unapt to make a due *Equilibrium*; or, the affected Muscle is so frequently contracted, that the *Vibration* is hardly perceptible, and there

therefore seems to be continually immovable. Now, any one of the Muscles may become *Paralytick* by an obstruction in its Nerves, and the *Animal Spirits* may be derived and determind towards the *Antagonist*, by which it must be continually *contracted* the quantity of the *Spirits*, being greater than is usual.

Again, 'tis plain, that only such *Convulsions* that are caused by a disorder in the *Brain*, are accompanied with a failure of the *Mind* and *Senses*. But when the Arteries of the *Brain* are pressed upon or are obstructed, the *Spirits* separated from the Blood (if there be any Separation at all) and deriv'd into the Muscles, are dull and unactive, and the *Convulsions* arising from this Cause, must be accompanied with the less Vivacity of the *Mind* and *Senses*. This is obvious from the unusual Posture of our Legs, or any other Member, by which, the Channels of the Blood and Spirits are pressed upon, and their Liquids obstructed in their Motion. For, the parts forthwith become torpid and stupified, and unfit for Muscular Motion.

And, *Convulsions* which come upon Wounds, Contusions, Inflammations, a Puncture or cutting of the Nerves, and the like, are always accompanied with Pain, i. e. a Stimulus, which causeth a violent and plentiful flux of *Spirits* into the Nerves of the affected Part, and thereupon must be contracted, and a *Convulsion* occasion'd, especially, when these Distempers and Disorders are likewise accompanied with an *Inflammation*

on and Heat, by which, the Spirits are rendered the more fluxible, and their Channels excessively dry and *Contracted*. But such *Convulsions* as are owing to a *Stimulus*, are not Continual; neither are *Convulsive Motions* always produc'd by it, or only by sharp and acrimonious Humours, but also by those that are cold, torpid and viscid, invading this or that Member *periodically*, without inducing a *failure* upon the *Mind* or *Senses*, unless they have an immediate *Connexion* with the *Brain*.

This Account of Convulsive Distempers being (as was necessary) premis'd, the *meaning* and *import* of Hippocrates his Observations concerning them are the more fairly pointed at, and may be viewed under these two Heads; namely, such *Convulsions*, as have been accounted *bad Signs*; and, 2dly, Such as are *Pernicious* and *Mortal*.

Thus, *Convulsions* are dangerous when they come upon,

Aph. 9. § 7. *Great Hæmorrhages of Blood.*

Aph. 1. § 5. *Immoderate Evacuations.*

Aph. 18. § 7. *The Iliac Passion.*

Aph. 2. § 5. *Immoderate Watching; and,*

Aph. 57. § 4. *Immoderate flowing of the Menstrua.*

And *Pernicious* or *Mortal* when they come after,

Aph. 25. § 7. *Taking of Hellebore.*

Aph.

Aph. 10. § 7. *Immoderate Purgations by Medicines.*

Aph. 26. § 2. *The Inſtillation of Wounds ; and,*

Aph. 66. § 4. } *Upon acute Fevers, but leſs*
 & in Coac. } *dangerous to Children.*
 Text. 269. }

Hence it is plain, that, *Convulſions* cauſed by *Emptineſs* of the Veſſels are more dangerous, than thoſe that proceed from a *Plethora* of *Humors*; eſpecially in *Fevers*, after ſome notable *Evacuations*. For, thoſe that are owing to *Repletion*, and happen in a State of Health, as they invade on a ſudden (by which they are known from the other) ſo likewiſe they are carried off, either upon the acceſſion of a *Fever* (a), or a brisker Circulation and Motion of the *Blood*. (b) Aph. 70. § 5.
 And, Generally ſpeaking, *Convulſions* in *Children* proceed from this *Plethora* of *Humors* and *Crudities* in the *Stomach*.

Reducible to this of *Convulſions*, is that of *HICKOPS*, which is nothing but a *Convulſive Motion* of the *Stomach*, or an intense *Vomiting*, or *Semblance* of it, often happening to old Men after large *Evacuations* by *Looſneſs*, or exceſſive *Vomiting*, &c. and therefore accounted among the moſt dangerous *Signs*, but portends no ſuch thing, when it comes upon *Surfeits*, exceſs in *Eating* and *Drinking*, or cauſed by ſharp and corrupted *Humours*. When this *Diſtemper* comes upon ſharp and continued *Fevers*, as
 it

it ſpeaks plenty of Malignant Humours, which irritate and *Stimulate* the Internal Coat of the Stomach : ſo likewise it is often followed by *Death*, as well as when it happens in *Dysenteries*. And it is too often *fatal*, when it comes after exceſſive Vomiting, and accompanied with a *redneſs* in the *Eyes*. (b).
 (b) Aph. 3. § 7. For, it ſignifies a Stagnation of the Blood, or an Inflammation of the *Brain*, or part affected. All *Hickops* in Old Men are dangerous.

Sometimes they come upon a *Faundice*, and then the Stomach ſeems to be loaded and irritated with *Bile*, which abounds in the Neighbouring Parts, as well as all the Body over. But in this and the fore-mentioned Caſes, the preceding and concomitant *Signs* are to be obſerved, in forming juſt *Prognosicks* concerning this Diſtemper. For, *Mortal Hickops* are always accompanied with other *Appearances* and *Symptoms* equally Pernicious ; ſuch as cold Sweats, a *Coma* or Lithargy, loſs of Speech, and ſuch like already Mentioned.

Having mentioned the *Loſs* and PRIVATION of *SPEECH*, which every one knows to be a Mortal and Pernicious *Sign* ; It may not be amiſs to conſider, after what manner this happens, and what are the apparent and diſtinguiſhing Differences of the *Voice*, which ſometimes go before it. 'Tis plain, that the Subſtance of the *Brain*, is ſo very ſoft and tender, ſo nice and curious in its *Make* and *Fabrick*, that 'tis ſoon diſordered ; and by
 any

any violent concuſſion of, or preſſure upon its Veſſels, *thoſe* of the *Nerves* whoſe Extremities are centered, complicated and twiſted in it, muſt be confounded and ſometimes relax'd, and the adjoining Parts, ſuch as are the *Tongue*, and other Organs of *Speech* and *Voice*, by reaſon of their Dependence and Continuity, diſabled from performing their Functions.

But this is not all, For, a right State and due Conſtitution of the *Lungs*, *Wind pipe* and *Throat*, and admiſſion of the *Air*, is no leſs neceſſary than that of the *Brain*, *Cheeks*, and *Lower Jaw*, &c. for an eaſy and natural Formation of *Words* and *Sounds*: and when one or more of either are wanting or defective, the *Voice* muſt neceſſarily be vitiated, and different from that which is natural, or altogether *loſt* and *intercepted* Hence it is, that the *Voice* is ſometimes *Hoarſe*, *Squeaking*, *Sharp*, *Trembling*, *Low*, *Stammering* and *Slow*, &c. all which Differences deſerve to be carefully conſidered in every Diſtemper, eſpecially thoſe that are *Feveriſh* and *Acute*, becauſe they fairly point out to us the State and Condition of the Sick, as every Sagacious Phyſician well knoweth.

Thus, (to advert upon ſome of them) the Voice becomes *Hoarſe*, upon drying up of the Natural Moisture of the *Throat*, and adjacent Parts by a *Feveriſh Heat*. Or, it proceeds from viſcid and congeſted Matter, by which the *Surface* of thoſe Parts become rough and unequal; for, ſo it happens in

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the *Small-pox*, upon breaking forth of the *Puſtles*, and when one in this Diſtemper ſpeaks freely and naturally, 'tis a certain *Sign*, that there is no eruption of the *Puſtles* upon the *Surface* of the *Throat*. But this by the bye.

Sometimes one ſpeaks as if he were ſtrangled, and this always ſuppoſes a Contra-ction or Diminiſhing the Natural Capacity and Amplitude of the *Larynx* or *Wind pipe*; Or, that the *Air* is taken in and expelled with a greater than uſual *Impetus*. For, we obſerve this *Sound* of the *Voice*, when we endeavour to take in the *Air* ſuddenly, (for it reſembles *Snorting*, being cauſed by a tremulous Motion through the *Noſe* and *Throat*) and in a great quantity, for expelling the *Blood* ſtagnated in the *Heart* or *Lungs*; by reaſon of its *Lentor* and *Viſciditiy*, or whatever other Cauſe: For, when this *Lentor* is taken off, or the *Blood* is expelled the *Heart*, or deriv'd into the *Pulmonary Vein*, the *Reſpiration* forthwith becomes *eaſy*, and the *Sound* of the *Voice* more Natural.

Again, a *Sharp* and *Squeaking Voice*, is ſometimes cauſed by an Inflammation of the *Diaphragma*, which communicates its *Heat* to the *Lungs* by reaſon of their *Vicinity*, and thereupon their *Membranes* either become too much flagged and relax'd or too dry, and conſequently more diſpoſed to *Vibrate* the *Air*, and expel it thro

the *Wind-pipe* and *Throat*, which likewise are supposed to be distended and rigid, and therefore the *Sound* and *Voice* is rendered the more *Sharp*. And,

Lastly, One becomes altogether *Speechless*, when the *Lungs* or those Places adjoining to the *Larynx*, are so much inflamed, that a liberal Passage for the *Air*, so necessary to moderate the *Voice*, is altogether obstructed. Or, when the Muscular Motion of the *Tongue*, *Cheeks*, *Throat*, and other *Organs* of *Speech* become defective, either by an obstruction of Animal Spirits, or want of them after a long continued Sickness; Or, a *Convulsion* and irreparable *Relaxation* of those Parts.

From what hath been said, Every one may readily conceive the *Danger* that attends a vitiated *Voice*, and the fatal Consequences of that which is altogether *Intercepted* and *Lost*; especially, when accompanied with other bad Symptoms. And, that the danger is less, when either of them happens upon an Excess of Joy, Fear, Suffocation in *Hysterick Fits*, Excessive Drinking, Worms, Disorders of the Stomach, Infliction of Wounds and such like.

But it highly deserves to be noted, that, one becomes *Speechless*, either by reason of an excessive Afflux of *Lymph* or *Saliva* into the Glands of the Mouth, by which the Fibres of the *Tongue* are swelled, relax'd,

and flagged and thereupon rendred unfit for Motion and Modulating the *Voice*, and the ſame Effect happens upon an Exceſſive *Heat*, by which the *Moifture* is dried up and conſumed, and the *Fibres* ſo much contracted, that one cannot ſpeak or manage his *Tongue*. And therefore the *Loſs* of *Speech*, is always to be conſider'd with reſpect to the other Concomitant *Symptoms* of the Diſtemper.

C H A P. XIII.

Of Prognosticks taken from the Appetite, Colour of the Face and Eyes, Cheeks and Tongue, and adjacent Parts.

Sometimes the *Appetite* is so keen, sharp and devouring, that, it can hardly be satiated : Thus, Teeming Women, and Maids in the Green Sickness, who are mostly Subject to this Distemper, are greedy and ravenous after the most absurd things; as Earth, Clay, Lime, cold Cinders and the like. As those of the other Sex, are likewise sometimes affected with the *Fames canina*, *Pica* and *Malacia*. But, whether these Distempers be owing to bad Humours congested in the *Stomach*, or to a mutual *Contact* of its Sides, I shall not determine, but 'tis beyond doubt, that, the more the *Stomach* is emptied of that *Mucus* and Viscidity that's natural to it, the keenness of the *Appetite* is the greater. And, an Excessive Hunger, always supposes a Consumption of the natural Moisture of the Body and Liquid of the Nerves, both which, are owing to want of Blood, (by which our Bodies are repaired) or, when its Quantity is diminished by the Exercise of the *Mind*,

in which there is a vast expence of Spirits, and also of the *Body*, in Muscular Motion. For, then there is a Consumption both of *Blood* and *Spirits*.

But 'tis far otherwise in a State of *Sickness*, in which, tho' there be a great Consumption of the Blood, and consequently of Spirits generated or separated from it; yet the Dejection of *Appetite* is sometimes so great, that one Loaths, and has an aversion to that which was swallowed down with Pleasure in time of *Health*. This may be justly attributed to an unhappy Constitution of the Blood, from which, bad Humors being separated and derived into the Glandules and Cavity of the *Stomach*, the *Appetite* is thereby not only weakned, but also an *Uneasiness* and *Pain*, especially, when these Humours fall upon its Coats and Membranes brought upon the *Mind*, and to avoid a greater, the aversion to Food becomes so great, that the sight of it is nauseous and uneasy. And,

Whatever be the Distemper, in which the Blood cannot be repair'd and supplied, the Sense of Hunger, which, in a State of Health naturally follows upon a Consumption of the nutritious Juice and Spirits, becomes more and more the less, by how much one is weakned by the violence of his Disease, and as his Blood and Spirits are exhausted; because, 'tis *Mediantibus illis*, that the Sense of uneasiness in Hunger, is communicated to the *Mind*. And, the voracious and greedy Desire after Food, which we observe after long *Sickness* and some time before ones *Death*,

Death, ſeems to be owing only to a random *Flux* of the few remaining Spirits into the *Stomach*, by which, its *Fibres* and *Tone* are a little reſtor'd, but their *Motion* in this State, being diſorderly and irregular, they make no long ſtay there, and then the *Senſe* of *Hunger* goes off, and the Patient dies upon his laſt *Morſel*.

Hence 'tis plain, that it muſt be a *good Sign*, if the *Appetite* of Sick People comes near to that which was uſual in a State of Health; Eſpecially in Chronical Diſtempers, and that a proſtration of the *Appetite* in the ſame Diſtempers muſt be *dangerous* and *pernicious* (a) if accompanied with ſincere *Stools*, (a) Aph. i. e. crude and unmixed Humours without 6. § 7.

Mucus or *Serum*. And, no leſs *omenous* is a *Dejection* of *Appetite* accompanied with a *Fever*, in long continued Diſtempers of the *Inteſtins*. And alſo, when an exquisite *Hunger* proceeds from immoderate Purgations, or, extream Heat in the *Stomach*, which ſuddenly grates and conſumes the Food without nourishing the Body, as it happens to thoſe who are *Lean* and *Hectick*. For, the *Chyle*, tho' prepar'd in the *Stomach*, is obſtructed in the *Meſaraick* and *Lacteal Veins*; ſo that a ſmall and inconfiderable Portion of it is derived into the Maſs of Blood, the better part of it either remaining in the *Inteſtins*, or is thrown out by *Stool*. Which probably, may account for the continual Loofneſs, Leanneſs, and keen *Appetite* of *Hectick* People. But, if the *Appetite* that was weak and ſunk comes to be very keen all on a

sudden, without any *Crisis* or mitigation of the Disease, the Patient as just now was observed, dies soon after. For it denotes a *Disorder'd Brain*, an irregular Motion of the Spirits, and an irrecoverable Loss of the sensitive Faculty.

DIFFICULTY of **SWALLOWING**, is no less *fatal*, after a long continued Sickness and Weakness. For, in the action of *Swallowing*, the inclination of the Mind and the Muscular Motion of the *Tongue*, *Cheeks* and *Throat*, are equally necessary. But when the Muscles of neither of these can be actuated, 'tis plain, that there is a want and defect of *Animal Spirits*, or, that the *Muscles* are irreparably *relaxed*, and can never be restored.

THIRST, and the want of it, and what's *portended* by both, in whatever Distemper, is yet more explicable. For, the one is owing to a *Plethora*, and the other to an *Emptiness* of the Vessels. Only, sometimes it happens, that in the first, namely, a *Plethora* of the Vessels; the Humors are so viscous in the *Arteries*, by which, the Salivary Matter is derived into the Glandules of the Mouth, that no *Lymph* or Spittle can be separated from the Blood; and therefore those Parts by want of necessary Moisture become dry, and the Sense of it communicated to the Mind is *Thirst*. But, if the other Parts of the Body are not dried up after this manner

manner, but moiſten'd by their *Lymph*, the *Thiſt* is not ſaid to be univerſal.

But *Thiſt* is oftner the Effect of *Heat*, which attenuates and evaporates the natural Moiſture or *Lymph*, empties the Veſſels, and drains the Blood of that Matter which is converted into *Spittie*, and ſtrain'd into the Glandules of the Mouth, which thereupon become intenſly dry, and the Patient is thirſty: And if this Liquid of the Salivary Glands is not totally exhausted, the remaining part becomes viſcous, and variously colour'd and compounded, according to the Degrees of *Heat* in the *Blood*, and proportion of *Lymph*. But this Effect of *Heat* and *Fervency* of the *Blood* in *Feveriſh* Diſtempers, is moſt remarkable upon the *Surface* of the *Tongue*, which receives the dry and hot Particles, which evaporate from the Cavities and *Surface* of the *Oeſophagus* and *Aſpera Arteria*; and probably too by reaſon of the Continuity of Parts by the *Heat* that comes from the *Breaſt* and *Abdomen*. Upon this account, the *Tongue* muſt become dry and thirſty, eſpecially upon its *Surface*, and its Fibres muſt be contracted, and by reaſon of their Weakneſs and Fineneſs, ſoon broke and pull'd aſunder, and at laſt, chapt and furrow'd. But more of this below.

Thus, *Thiſt* being ſometimes owing to a *Lentor*, or groſs Humors in the Blood, obſtructing the Afflux of *Lymph* into the Glands of the Mouth, and ſometimes to a conſumption and exhausting of it by an intense *Heat* and *Fervency* in the Blood; 'tis fairly accountable

countable, after what manner the *Thirſt* of thoſe in *Malignant Fevers* is ſometimes diſproportioned to the *Feveriſh Heat*, and why tho the Blood be ſometimes intenſly hot and *ſervent*, there is little or no *Thirſt*: For, in this laſt caſe, the Blood may be diſſolv'd, and its Conſtitution entirely alter'd (whiſt the *Heat* continues) and thus render'd leſs *perſpirable*: So that ſome Parts, eſpecially the Subſtance of the *Tongue*, may receive ſufficient Moiſture and Humidity from the *diſſolved Blood*, whiſt its *Surface* may appear to be *dry*, by reaſon of the hot Particles which it continually receives from the adjoining Parts; namely, the *Aſpera Arteria* and *Oeſophagus*. But, tho' the Blood be not diſſolv'd, and the *Tongue* is dry and parcht, not only in its *Surface*, but alſo throughout its Subſtance; yet, who knows not, that one in this Diſtemper may have no ſenſe of Thirſt, if the Nerves likewise be ſo much dried up and ſhrunk, or their Canals ſo much obſtructed by groſs and viſcous Humors, that the *Senſe* of it cannot be communicated to the *Mind*.

Hence 'tis obvious, that to have great *Thirſt* in *Fevers*, and Diſeaſes which come from *Heat* and *Inflammation*, is uſual and natural, becauſe *Heat* attenuates the *ſerous* part of the Blood, and evaporates the *Lymph* or Matter which is converted into *Spittle*, by which the *Glands* of the *Mouth*, *Throat* and *Tongue*, are moiſten'd. But, to want it in thoſe Diſtempers, muſt be a *dangerous* and *pernicious Sign*, either as 'tis owing to a *Diſſolution* of the *Blood*, or to a *Drieneſs* and *Contraction*

traction of the *Nerves*, or an Obſtruction in their Canals juſt now mentioned; or laſtly, to a Moiſtening of the *Tongue* by the humidity of the *Brain*, as was antiently believed. And no leſs *fatal* is it, when the *Thiſt* is ſo great, that nothing can allay it, and when one has an ardent deſire after odd and unaccuſtomed Liquors, and inconfiſtent with the State and Condition of the Sick, and nature of his Diſtemper; as Vinegar, Spirits of Wine, and ſuch like.

The *Colour* of the *F A C E*, upon the Invaſion, and throughout all the *Periods* of Diſeaſes, being ſo remarkable, ſo often and variously chang'd from that which is natural; ſometimes by degrees, and then all on a ſudden, ſometimes at the beginning, and ſometimes in the *Status* of the Diſtemper, and ſometimes when there is none at all, excepting that of the *Paſſions* of *Anger*, *Joy*, &c. it may not be amiſs to enquire into the productive Cauſe of ſo many various *Appearances*, and what they portend and prognoliſicate.

That the *high red Colour* of the *Face*, is cauſed by a *Plethora* and Fervency in the Blood, is evident: For the parts of the Blood being rarefied, its Channels muſt neceſſarily be enlarg'd, and the Capillary Arteries *diſtracted*, whence, ſome finer parts of the Blood are ſtrain'd or *ouz'd* into the Interſtices of the Cutaneous Fibres, by which the Skin of the *Face* is render'd more reddiſh than is uſual, and therefore is believ'd to *preſage* either an *Hemorrhage* at Noſe, or an Inflammation of the *Brain*, an approaching *Delirium* and

and Hemorrhoids, and ſometimes Convulſive Fits in Children.

This Colour, in *Malignant Fevers*, is obvious and uſual, by reaſon of the various and different State of the Blood in that Diſtemper: For the *Face* looks florid and lively, whilſt the *Blood* circulates freely through its Channels, and alſo the *Spirits* in the Nerves; but in a little time 'tis far otherwiſe, when both are interrupted, for then the ſame Perſon looks pale or livid; but nevertheless may again at the very approach of *Death* recover a brisk and gay Colour. For, by reaſon of a Defect in the *Spirits*, the groſſer part of the Blood ſtagnates in the Veſſels of the other Parts, whilſt that which is more fluxible and thin, is fluent enough in thoſe of the *Face*.

Again, in *Inflammations* of the *Lungs*, and other *Pulmonary* Diſtempers, the Colour of the *Face* is lively and roſy, becauſe the *Lungs* being inflam'd, and their Channels obſtructed, the Blood that ſhould circulate in them, muſt ſtagnate in the Branches of the *Vena Cava*, which are diſtributed to the *Face*, whilſt the thinner part of it is fluent in the *Arteries*; and therefore the Veins of the *Face* appear to be puſt up and roſy colour'd. And, that the Blood of thoſe in this Diſtemper, ſhould be very thin and fluxible, is very evident becauſe its groſſer Parts are intercepted and congeſted in the *Lungs*.

The *yellow*, and ſometimes *blackiſh* Colour of the *Face* and *Skin* in the *Jaundice*, cauſed by an Obſtruction of the *Cholidocus* or *Porus Biliaris*;

Biliarius, or Glands of the Liver, by glutinous and calculous Humors, intercepting the *Bile* in its *Flux* into the Intestins, is effectually taken off by salt, volatile and bitter Medicines, unless there be a hard *Tumor* or *Schirrus* in the Liver, which is not so easily dissolved. The *Colour* of the *Face* observed in those who have been bit by a mad Dog or Viper, and that which comes upon Anger, Hysterick Fits, long Watching, immoderate Purgations and Evacuations, Hunger, and the like, and what's portended by it, is too well known to be insisted on. Only,

The *white* and *pale Colour*, in whatever Distemper, may be observed to signify either want of Blood, or an Obstruction in its Circulation. Thus in Lethargick Distempers, *e.g.* not only the *Face* and *Eyes* are blouted and swell'd, but also the *Face* is *pale-colour'd*, by reason of gross and viscous Blood in the internal and external *Arteries* of the *Head*, which, notwithstanding the violence of its Motion in those Vessels, cannot be deriv'd into the *Veins*, and therefore must stagnate in the *Arteries*, and the *Face* must look *pale*, by reason of the viscous and whitish Humors mix'd with the stagnated Blood: But, when from a *pale*, the *Face* comes to be *livid* and *blackish-coloured*, there is no hope of Recovery. Of this *Colour* are the *Spots* that appear in the *Back*, *Loins*, and other *Parts* of the Body in acute and pestilential Fevers, and those that have died of *Poison*.

There is yet another notable Alteration in the *Face*, which is always *suspected*, *pernicious*

ous or mortal, especially when it happens a few days after the Invasion of some acute Distemper, without any apparent Reason; and this is a Compression or Sharpness of the Nose, with hollow and sunk Eyes, a Stiffness and Rigidity of the Temples, Coldness in the Ears, Driness and Hardness of the Skin of the Face, and a greenish, livid or blackish Countenance or Colour. This is the (a) 2 Prog. *Facies Hippocratica* (a), and not unlike to it is the resemblance of Friends and Relations, that some have observ'd in the Countenances of those in a hopeless Condition.

The EYES which we have so often mention'd, in a State of Sicknes are consider'd with respect to their Magnitude, Situation, Colour, Motion, Vision, and Splendour. This curious Organ appears to be Globular; but when 'tis divested of its Muscles, it is oblong, and in some manner resembles a Pyramid, having its Basis without, and Point within. Its Size is various and different: The larger is esteem'd the handsomer and more becoming, tho' more expos'd to Injuries from without and within, and not so sharp sighted as that of a lesser Size. Its Soundness is known by its fresh and gay Colour, Fulness, Brightness and Eminency, in looking upon the Light without Uneasiness, in its Muscular Motion, by lifting up and shutting the Eye-lids, and being without Excrements, Tears and Blearedness, Redness, Dulness and Distortion, &c. But the Eyes are not here consider'd with respect to their natural Defects, or any foreign Influence, as
hard

hard Drinking, violent Vomiting, and ſuch like external Cauſes ; but as influenc'd, chang'd, and alter'd from their natural State by the violence and ſharpneſs of Diſeaſes.

In the juſt mention'd Deſcription of *Facies Hippocratica*, the *Hollowneſs* of the *Eyes* is juſtly taken notice of, becauſe, of all the ſolid Parts, *theſe* are moſt liable to be extenuated, hollow and ſunk, being, that they conſiſt moſtly of Fat and Liquors, which are ſoon exhausted, conſum'd and flatten'd, making ſuch a *Vacuum* in their *Orbits*, that 'tis evident and conſpicuous, that it being thus with the *Eyes*, the Body muſt be in a conſumptive and dying State.

In ſome acute Diſeaſes, one of the *Eyes* appears bigger than the other, and condemn'd by *Hippocrates* as a mortal Sign (a): Neither (a) *Progn.* had he a better opinion of involuntary Tears (b), (of which above) for ſuch muſt (b) *Aph.* proceed from the acuteness of the Diſeaſe, 52. § 4. by which the Texture of the Glandules is diſſolv'd, and not from any peculiar Affection of the *Eyes*, or *Paſſion* of the *Mind*.

Neither is it leſs dangerous, when the *White* of the *Eye* becomes ruddy-coloured (c), (c) *Hipp.* or over-run with livid and black Veins. *in progn.* Thus it happens in *Quinſies*, and ſuch like Diſtempers, by reaſon of the Confluence of the *Carotides* and *Jugular Veins*, both which being preſſed upon by the Inflammation, the Blood can have no flux into the *Brain*, nor return from it into the *Lungs*, and therefore muſt ſtagnate in the *Throat*, *Face*, and *Eyes* ; upon which they become ruddy, fix'd, and without

without Motion. And thus likewise are the Eyes affected in *Malignant Fevers*, in which the Parts of the Blood being unequal, the groſſer part being leſs fluxible, is detain'd in the *Capillary Arteries*, diſtributed to the *White* of the Eye.

The *rolling* and *vibrating* Motion of the Eyes have been obſerv'd by *Hipp.* in *Coac* to prognosticate an approaching *Delirium*. *Præcordiorum pulſus cum turbatione mentem movet, idque præcipue ſi oculi frequenter move-*

*In Progn. antur *. For this Motion is owing to the
pag. 38.

Impetus and violent Motion of the Blood, and irregular Afflux of a greater than uſual Portion of Spirits into the *Muſcles* of the Eyes, by the Preſſure of the *Arteries*. And when the Heat of the Blood is exceſſively great, the Nervous Liquid is irregular in all its Motions; and therefore the Parts into which it is deriv'd become *tremulous* or *convulſive*, and the Representation of *Species* made to the *Mind*, *confus'd* and *diſorder'd*.

Every body knows that 'tis an *omenous* and mortal Sign, when the *White* of the Eye is
† Aph. 52. ſeen between the *Eyelids* †, if this manner
S. 6. of ſleeping be not uſual, or owing to immoderate Evacuations, or Worms, Children troubled with them being ſometimes obſerv'd to ſleep with their Eyes half open: For this *Appearance* can be aſcrib'd to nothing elſe than to a defect of the *Nervous Liquid*, whereby the circular Muſcles of the Eyes are rendred ſo ſoft, relax'd and flabby, that they cannot be duly contracted, actuated, or ſhut. But the *Diſtortion* of the Eyes, ſuch

as ſometimes is obſerv'd in *Epileptick Fits*, is not attended with ſuch *fatal* Conſequences in that, as in other acute Diſtempers, in which, ſuch *Convulſions* of the *Eyes* are juſtly ſuſpected and pernicious; and when they come to be fix'd and immoveable, there is none but knows, that Death is at hand.

As to the *TONGUE*, 'tis plain and evident, that the ſureſt Signs of the State of the Blood, the great Spring of the *Machine*, are taken from it, being a Collection of an infinite number of Fibres and Glandules, thro' which the morbiſick redundant Parts are convey'd, without ſuffering any conſiderable alteration by the way, as they do in other *Emundories*. And the Divine *Hippocrates* having obſerv'd, that the *Tongue*, by its different *Colours*, points out to us the various and predominant Humors of the Body, it deſerves to be carefully conſidered in all its Affections and Alterations, not only in the *Prognosticks*, but alſo in the *Diagnosticks* of Diſeaſes, eſpecially conſidering, that other Signs may frequently deceive us, whereas this ſeldom does.

In a State of Health, the *Tongue* is well known to be *rediſh colour'd*, ſoft, and proportioned, fit for taſting and ſpeaking; but upon the Invaſion of Diſeaſes, it ſuffers a great many Changes and Alterations: For, being an open, ſoft and glandulous Subſtance, it is the more capable of receiving the Impreſſions and Colour of the more groſs Particles, or ſerous Humors and Vapours, or to be dried up and harden'd by the Conſumption

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of

of its natural Moisture and Humidity. So that 'tis readily conceiveable, that it must be a *good Sign* in whatever Distemper, when the *Tongue* is likest to that which we have represented it to be in a State of Health; and that the more it is different from it, so much greater must the *Danger* be.

But the most remarkable *Appearances* of the *Tongue* are its Colour and Driness, Softness, Roughness and Inequality, and that sometimes 'tis covered with hot small Tumors, and sometimes with those that are cold; that 'tis sometimes affected with immoderate Thirst, and sometimes with none at all; that sometimes 'tis so much swell'd and enlarg'd, that it cannot be contained in the Mouth, so that many have been suffocated by it: And sometimes 'tis extreamly diminished by intense Heat and Inflammation, which is no less dangerous. All which various and different Affections of the *Tongue*, being justly ascrib'd to a Fervency in the Blood, and Consumption of its *Serum*, or to an over-great plenty of flegmatick and watery Humors; the *Prognosticks* taken from it will be plain and obvious. Thus,

The *Tongue* for most part is dry in all *Feverish* Distempers; and as the Feverish Heat and Inflammation is increased, so is its Driness, until at last it comes to be withered, hard, and unequal, cleft, ulcerated and black, &c. For in every Distemper accompanied with a Fervency in the Blood, the *Lymph* and Humidity of the Parts must necessarily be exhausted, especially that of the *Tongue*, and the

the Fibres every where diſtributed through it, render'd rigid and contracted. Hence is its *Roughneſs*, as its *blackiſh Colour* is probably owing to the *Blood*, which wanting a due proportion of *Serum*, is the more diſpoſed to ſtagnate under its *Surface*; or, the thinner part of the *Blood* being evaporated, its groſſer Parts thereupon become leſs fluxible, earthy and dry, repreſenting a *darkiſh Colour*.

For the ſame reaſon it comes to paſs, that the *Tongue* is *chaſt* and *cleft*: For it's *Surface* conſiſting of a Bundle of Fibres variously affected, partly by the defect of *Lymph*, and partly by hot Vapours ariſing from the *Breaſt* and *Abdomen*, comes at laſt to be ſo much withered, dried and contracted, that they muſt be broken and cleft aſunder.

Now as this State of the *Tongue* fairly indicates that of the *Blood*, 'tis readily conceivable how *dangerous* a Sign it muſt be, when one in this condition has little or no *Thiſt*: For as *Thiſt*, as was but now obſerv'd, may be owing to want of *Saliva* and *Moifture* in the *Tongue* and *Throat*, dried up and exhausted by the Fervency of the *Blood*, or to viſcous and groſs Humors obſtructing its Afflux into the Salivary Glands; ſo when the Heat of the *Blood* is intenſely great, and the *Tongue* is dry and chaſt, without any Senſe of *Thiſt*, the moſt probable Cauſe for this *Appearance*, muſt be aſcribed to the Diſſolution of the *Texture* of the *Blood*, by which, the Parts in ſome meaſure may be moiſtened, while the *Surface* of the *Tongue* is harden'd and dry, by reaſon of the Heat

and Vapours which ariſe from the Breſt, *Aſpera Arteria*, and *Oeſophagus*: Or, the Nerves may be ſo much dried and contracted, that the Senſe of *Thiſt* cannot be communicated by them to the Mind. Now, whether this or that be the productive Cauſe of want of *Thiſt*, while the Tongue is parcht, dry, and burnt up, the caſe is deplorable: Or if *Thiſt* be taken off (as ſome will have it) by a Diſtillation of ſome ſerous Humor from the Head, or much ſleeping, in which caſes 'tis obſervable, that the Tongue is not equally moiſtened in all its Parts; yet, when want of *Thiſt* in a dry and black Tongue, is not owing to either of theſe (as probably it is not) a *Delirium* and Death is not far off.

Neither is the *Heat* and *Roughneſs* of the Tongue, either in the beginning or progreſs of the Diſeaſe, more pernicious and mortal than is its *coldneſs*; for *Death* follows ſoon after. This Obſervation, which *Baglivius* tells us was communicated to *Riverius* by *Pecquetus*, was well known to the Antients, and deſerves to be carefully adverted to in all inflammatory Diſtempers, as well as in thoſe whoſe Bodies have been much ulcerated or extenuated. But this *coldneſs* of the Tongue ſometimes happens in *Diarrheas*, without any remarkable coldneſs in the extreame Parts, and thoſe who have been afflicted with that Diſeaſe, have nevertheleſs been obſerv'd to live ſeveral Days in that State.

From what hath been ſaid, 'tis I think readily accountable, after what manner the Tongue is ſo often and variously chang'd and alter'd

alter'd from its natural State and Colour, besides its Affections already mentioned, to a *Citron, yellowish*, or any other Colour, if we advert to the Vapours that arise from the Stomach, the Effects of Spittle, and bilious Particles variously mixed with those of the Air. And, why in *Lethargick Distempers*, the *Tongue* is *soft* and *white*, if we consider, that it is soak'd and loaded with plenty of cold and watery Humors, and sometimes so thick, viscous and clammy, that they bring a Film upon its *Surface*, consisting as 'twere of innumerable small Bubbles, like white Froath, as every one knows. And lastly, why the *Tongues* of those in a *Quinsy* are sometimes *livid* and *black*, and sometimes turned inward and *distorted*: For the first of these proceed from itagnated and obstructed Blood in the Vessels of the *Throat*, and the last, namely, the *Distortion* and Bending of the *Tongue*, from a *Convulsion* of its *Muscles* in this or t'other side, or a *Relaxation* of their *Antagonists*, by an Obstruction in their Nerves and Arteries.

The *THROAT*, by reason of its Vicinity to the *Tongue*, must needs be equally affected with it, especially in acute Distempers, and therefore requires the Physician's particular care and regard: For when it comes to be *ulcerated*, it as well tells us the sharpness and vehemence of the *Fever*, as when the *Tongue* is *black* and *dry*, both being equally dangerous, especially when accompany'd with other ill Signs.

C H A P. XIV.

Of Prognosticks taken from Horrors or Shivering, Tremors and Palpitations.

AS *Horrors* and *Rigors* are distinguished from one another, only *secundum majus & minus*, so both are known to be a convulsive Motion, or sudden and involuntary Concussion of the whole Body, as *Tremors* are that of a particular Part: And that those are sometimes slow and quick, sometimes weak, and sometimes more violent, happening to us in a State of *Health*, as well as in *Sickness*, upon the Passions of *Fear*, *Anger* and *Love*, entering into *hot* or *cold* Baths, and upon the Representation of things to the *Mind*, that partake neither of *Heat* or *Cold*, such as are ungrateful Sounds, tasting of Stiprick Liquors, eating unripe Fruit, after voiding of Urine, and a thousand such like cases, whilst the Blood is warm and brisk in its Motion, as well as in the *cold Fits* of *Intermitting Fevers*.

But these surprizing *Phænomena* have hitherto been unaccountable, and justly reckon'd amongst those which are yet beyond Human reach. And no less unsatisfying are the *Theories* we have concerning *Horrors* or *Shiverings*, which happen upon the Invasion of
most

moſt *Feveriſh* Diſtempers, and the regular *Periods* of thoſe that are *intermitting*. For, tho' the *Appearances* of this Diſtemper be expoſ'd to our Senſes, and we know them by dire Experience; yet their immediate Cauſe, and the *Mechanical* account of their Nature, tho' inquir'd into with the utmoſt diligence, by the moſt ingenious of the Medical Faculty in all Ages, remains yet to be a *Problem*.

Only it ſeems to be plain and evident, according to the Great *Bellinus*, that the Senſe of *Cold*, and the *Shivering* that follows thereupon, muſt be owing to a *Lentor* of the Blood and groſs Humors impacted in the Capillary Arteries, obſtructing the *Motion* and *Velocity* of the Blood, the neceſſary and eſſential Cauſe of *Heat*. For, whereſoever there is not a due Motion of the Blood and Attrition of its Parts, there can be no *Heat*, or where its *Velocity* is leaſt, there its *Heat* muſt be the leſs. And ſeeing in every *Section* of the Arteries, the *Velocity* of the Blood is diminiſhed according to their diſtance from the Heart, its Motion in the Capillary Arteries of the extream Parts, eſpecially when loaded with Lent and viſcous Humors, muſt be very inconfiderable. Again, when the Blood and heterogeneous Humors mix'd with it, ſtagnate as 'twere in thoſe ſmaller Channels all the Body over; the Circulation muſt be more ſlow than uſual, and at every *Contraction* of the *Heart*, an inconfiderable Portion of Blood is ſqueez'd into the greater Arteries, and the *Impetus* of the *Heart*, by a defect and want of Spirits, ſeparated only

from viscous Blood, must be considerably weaken'd.

For these Reasons it comes to pass, that the Attrition of the Parts of the Blood must be very little, and consequently the *Heat* diminish'd, *i. e.* a stimulating and pricking Sense of *Cold* is excited over all the Body, especially when the Humors are so gross and viscous, that the *Flux* of the Spirits into the Nerves and Muscles is obstructed, or that their Proportion is not equal to ballance those which have *Antagonists*: For then the one must be *contracted*, and the other *relax'd*, *i. e.* the Motion of the Spirits is irregular, and one in this case must fall a *trembling* and *shivering*, and undergo an universal Concussion in all the Parts of his Body. And for the same Reasons his *Pulse* becomes *weak*, *low* and *slow*, and sometimes *quick* and *unequal*; and by degrees, the Arteries, by reason of the *Cold*, are so much contracted and sunk, and the *Impetus* and *Velocity* of the Blood so much diminish'd, that the *Pulse* at last comes to be almost *imperceptible*.

But this Scene is quickly chang'd, when the warmer Parts of the Blood intangled with the viscous Humors, are disengag'd by the Power and Force of Nature; and when the Fibres which were over-stretch'd and distracted by the Impulse and Pressure of *Blood*, recover their former and natural State (for they always have some *Elasticity* and *Nisus*, unless they be totally contracted and relax'd) upon which the *Texture* of the Humors is dissolv'd, and their Parts separated from one another, and render'd

der'd more fluxible to be deriv'd with the Blood into the Veins with a greater than uſual Motion and *Heat*, its Moles and quantity being augmented, the Animal Spirits diſengag'd, and the Senſe of a burning Fervency felt in the ſmaller Arteries adjoining to the Heart, and then diffuſ'd to the extream Parts. And tho' the time that's requiſite for the diſſolution of the Humors, by reaſon of their greater or leſſer Viſcidiry, and Communication of the *Heat* to the extream Parts, be uncertain and undetermin'd ; for as yet *Heat* and *Cold* are alternative ; yet, at laſt the viſcous Humors come to be fluxible with the rareſied Blood, its Circulation is advanc'd, Perſpiration promoted, and the *Heat* continual, exquisite, and augmented, until it hath diffuſ'd it ſelf, not only into the Capillary Arteries, but alſo into their greater Channels, and thoſe of the Veins. But,

After many Contractions of the Heart, the rareſied Blood comes to be diminished in its *Moles* by *Perſpiration*, and the exquisite *Heat* by degrees is render'd more gentle and remiſs, according to the degrees of the Viſcidiry of the Humors, by which the *Duration* both of the *hot* and *cold* Fits are determined. And, as in the *cold* Fit, the *Pulſe* was *weak*, *low*, and *ſlow*, ſometimes *quick*, and *unequal*, and ſometimes almoſt inſenſible ; now, the Blood being render'd more fluxible, hot, rareſied and fervent, the *Pulſe* becomes *ſtrong*, *brandiſhing* and *quick*, until the viſcous Humors circulating with the Blood be again deriv'd into the Capillary Arteries, by which

a new *Paroxyſm* of *Cold*, and then of *Heat*, accompany'd with the juſt mentioned Circumſtances, and after the ſame manner is commenc'd and accompliſhed in the ſame *Order* and *Time*, until after five, fix, or more ſuch *Paroxyſms*, the *Lentor* of the Blood be totally taken off, or alter'd and chang'd in its quantity or quality; which muſt needs be the effect of *Perspiration*, *Rarefaction* of the Parts of the Humors, and their *Circulation* through the *Lungs*, whoſe *Structure* ſeems to be adapted and contriv'd for this purpoſe.

But the moſt ſurprizing *Phænomenon* of this Diſtemper is the regular Return of the *Paroxyſms*, ſo nicely at certain and determinated *Periods*, Hours, and almoſt Minutes; as if the Time were meaſured by the exacteſt *Pendulum* or *Dial*; which being ingeniouſly accounted for by the Great *Bellinus* and *Borellus*, in purſuance of our purpoſe, I proceed to obſerve, that

As *Horrors* or *Shivering* uſher in moſt part of acute Diſeaſes, eſpecially *Fevers* of all kinds, continual or intermitting, the Meaſles, Rheumatifms, Eriſipelatoſe Fevers, Quinſies, Pleuriſies, Scarlet Fevers, the Bloody Flux or Dyſenteries, the Small Pox, and others, the Iſſue and Event whereof cannot be eaſily prognoficated by the manner of their firſt Invaſion; and ſuppoſing the *Lentor* of the Blood, the productive Cauſe of thoſe Diſtempers, to be ſo great, that it cannot be deriv'd from the Arteries into the Veins, or ſo *viſcous*, that its Parts cannot be diſſolv'd, but obſtinately clung to the *Surfaces* of their Channels;

Channels; an univerſal and mortal *Coldneſs* would quickly enſue, the Blood could not be deriv'd into the Muſcles, but muſt ſtag-nate in the Brain, and there could be no Se-paration of Animal Spirits, but an irrepa-rable Privation of the Senſes, external and internal, *i. e.* inevitable and certain Death.

Hence it is, that *Agues* or *Intermitting Fe-vers* are more dangerous in the *cold* than the *hot Fit*; and if the *Lentor* or viſcous Hu-mors are derivable into the Veins, and suc-ceeded by a burning and intolerable *Heat*, the Blood muſt be exhausted, and the Spirits conſum'd; or, ſuppoſing the *Heat* to be gentle and moderate, and happening to one whoſe Strength is already much waſted by the violence of the *cold Fit*, the Danger how-ever is not ſo great as ſome time after, name-ly, when the few remaining Spirits are to-tally ſpent and exhausted.

But after all, the fatal Conſequences of *Shiverings* in *intermitting Fevers* are oftner to be aſcribed to the Miſmanagement of the Patients, and abuſe of *Medicines*, than to the Genius of the Diſeaſe. 'Tis true, in *former Ages*, this Diſtemper was long and afflict-ing: 'tis the Happineſs of *this* to have found a ſafe as well as certain Remedy for the Cure of it, namely, the *Peruvian Bark*, which deſerves the firſt place among all the *Medicines* yet known; not only for its ex-cellent Virtue in this, but alſo in the Diſtem-pers of the *Womb* and Stomach, and many others, when miniſtered by the hand of a pru-dent and ſkilful *Physician*. And,

Tho'

Tho' the uſe of it by ſome is *diſcontinued*, probably to give reputation and credit to their *Arcanums*, of which the diſguiſed *Cortex* is the *Baſis*, and falſely charged with all the uneaſy Effects of the Diſtemper, which, if there be any, ſhould rather be aſcribed to an undue Adminiſtration of it. And others reckon, becauſe it quells the Inſults of this Diſeaſe, as it were by an occult Quality, and not by ſenſible Evacuation, that the Matter cauſing this Diſeaſe, and ſhould have been thrown out, is ſhut up by its aſtringent Virtue; never conſidering, that the *Perspiration* and *Sweats* which happen at the end of the *Fit*, have carry'd off the *Febrile* Matter congeſted in the intermitting Days; and that the Relicts of the Diſtemper only remain to be ripen'd for another, which by the *Bark* is prevented. And tho' it be commonly ſaid, and perhaps juſtly too, that *Agues* are taken off by its *aſtringent Virtue*, yet we know no other *Aſtringents* indued with the like Virtue. Nay, it cures ſome, who after taking it, go to Stool as if they had taken ſome purging Potion. But this by the by.

Agues that come in the Spring are ſeldom long laſting, ſo that the eldeſt Men, or any weak Perſon, run no great riſque by them, unleſs they be miſmanaged by unſeaſonable bleeding or purging. But *Quartans* are more dangerous and obſtinate, and often kill old People, unleſs they have had it before.

Hippocrates has obſerv'd to us, that the *Nubecula nigra* appearing in intermitting Fevers, ſignifies and imports, that the *Periods*
of

of the cold *Fits* or *Horrors* will be uncertain; and without any order : And that Membranous Urine ſuppreſſed with *Horror*, denotes an approaching *Convulſion*. Blackiſh *Eneo-remata* tells us indeed, that the groſs Humors are imperfectly concocted, and being the productive Cauſe of *Shiverings*, the time when they ſhall be totally concocted cannot be certainly determined : So that ſuch Urine may probably *preſage* their Invaſion to be very uncertain : And that a Suppreſſion of Urine with *Horrors* and *Shivering*, is nothing elſe than a Contraction of the whole Body, or that of the circular Muſcle of the Neck of the Bladder, *i. e.* a *Convulſion* of it. And membranous Urine, ſo called, being nothing but viſcid Humors, argues plenty of them to be lodg'd in the Blood, rendering it ſharp and acrimonious, firſt exciting *Horrors* and *Shivering*, and then *Convulſions*, or a violent Contraction of the Muſcles.

It likewiſe deſerves to be obſerv'd with this Great Man, that, little Sweats and frequent *Shivering*, ſignify an *Empyema* or *Impoſthume* (a). For the internal Parts being (a) Hipp. 10. Coac. 1. ſtimulated and irritated by the Acrimony of the Humors occasions the *Horrors*; and *Weakneſs*, the little Sweats. He likewiſe had a favourable Opinion of ſuch *Horrors* that happen'd upon continual Fevers on a Critical Day, *i. e.* when a fortuitous change happen'd to the Diſeaſe accompany'd with Signs of a preceding Concoction and following Evacuations; as copious Sweats, Vomiting, Dejections or inſenſible Perſpiration (b). But, (b) Aph. this 58. §. 4.

this *Aphorism* ſeems to have reſpect to ſome kind of *Fever* peculiar to the *Grecians*, or Inhabitants of thoſe hotter Countries, according to the Learned Doctor *Liſter's* Remark upon it. But,

'Tis more plain, that *Shivering*, ſucceeded by little or no *Heat*, muſt, as was formerly obſerv'd, be accompany'd with very bad Conſequences : For it ſignifies great plenty of groſs and obſtinate Humors impacted in the Capillary Arteries, an Obſtruction of the Glandules, and an inſuperable *Lentor* of the Blood. And if a *Coma* happens upon *Horrors* on a *Critical Day*, or invades without being accompany'd with laudible Evacuati- ons, eſpecially in *continual Fevers*, and when the Strength of the Patient is weaken'd and ſpent ; Death is inevitable (a). 'Tis like- wiſe obvious and plain, how *omenous* it muſt be, when *Horrors* come frequently, not only in the beginning, but alſo in the progreſs of *acute Fevers*, and thoſe called *malignant*, with- out any order or determin'd time, and often in the ſpace of one day ; this being a certain Sign of an Inequality in the Blood, i. e. that 'tis partly viſcous, and partly too liquid, thin and diſſolv'd ; ſo that when that which is viſcous is impacted in the *Arteries*, there can be no regular *Circulation* or *Heat*, but inſtead of it, *Cold*, *Horrors*, and *Shivering*.

Laſtly, every one knows how dangerous it is to be taken with *Horrors* after *Sweating* (b). For, as we have ſeen, thoſe *Sweats* that do not mitigate the Diſeaſe muſt be unprofitable and bad ; ſo they muſt neceſſarily be more dange-

(a) Aph.
46. §. 4.

(b) Aph. 4.
§. 7.

dangerous, when ſucceeded by *Cold* and *Shivering*: For it tells us, that the more refin'd *Serum* only, like that evacuated by inſenſible Perſpiration, has been filtrated through the cutaneous Glands, whilſt the more viſcous Humors have been lodg'd in them, or retain'd in the Blood. Add to this, that frequent *Horrors* in the *Loins*, with a ſucceeding *Heat*, preſages a great *Suppreſſion* of *Urine*, and thereafter to *sweat* has been obſerv'd to be moſt dangerous (a). But now ſhortly as
 to *Tremors* and *Palpitations*. (a) 1 Coac.
Aph. 8.

A *VOLUNTARY TREMOR* is nothing but a ſucceſſive and frequent agitation to oppoſite Parts, as in ſhaking of the Hand, the *Antagoniſt* Muſcles are ſucceſſively and quickly contracted: But 'tis an *involuntary Tremor* that now falls under conſideration, namely, ſuch as are daily obſervable in thoſe who are extremely extenuated by Want, Old Age, Sickneſs, hard Labour, and the like; and therefore are unable to ſuſtain any tolerable Weight without *Trembling* and *Shaking*. Now 'tis plain that this cannot be juſtly aſcribed to any other Cauſe than to a want and defect of the Nervous and Spirituous Juice, which ſhould be communicated by the Nerves: For this *Tremor* in ſome caſes is quickly taken off, and the Weakneſs repair'd on a ſudden by Food, ſpirituous Liquors and Cordials, ſo that one is enabled to exert a greater Power than formerly he was able to do, the *Coagulum* brought upon the Spirits being taken off, and the Orifices of the Nervous *Tubes* and *Paſſages* deobſtructed.

This

This Diſtemper neither depends upon, or can be reſtrained at our will and pleaſure, notwithstanding our moſt earneſt Endeavours. Thus in *Tremors* of the *Head*, which in *Apoplexies*, *Lethargies*, and ſuch like Diſeaſes, ſeem to be owing to an unuſual Weight, or compreſſive Faculty, not to mention the more immediate Cauſes, we endeavour as much as we can to keep our *Heads* ſtreight and upright, and therefore we contract the *Musculos Rectores*; but theſe being *relaxed* through a defect and want of Spirits, the *Head* falls down again, and is ſucceſſively liſted up. This ſucceſſive Motion of *Contraction* and *Relaxation* of the Muſcles, is that we call a *Tremor* of the *Head*, which likewiſe happen to other Parts deſtitute of a proper Support, ſuch as are the Hands and Arms, &c. And the *Tremors* and Concuffions of the Body in time of *Sleep*, is owing to an uncertain, diſordered and unequal *Flux* of the Spirits into this or that Muſcle.

But of all *Tremors*, thoſe in *Paralytick* Diſtempers deſerve the greateſt conſideration, whether they be owing to a *Privation* of *Senſe* or *Motion*, or both, proceeding from too great Humidity or Drineſs of the Parts, Cold, Heat or Compreſſion, &c. and affecting the Nerves either *idiopathically* or *ſympathically*. For, when the *Tremor* is chang'd into an univerſal *Concuſſion* and *Succuſſion* of the Body, the Diſtemper is irreparable and mortal; becauſe in this caſe, all the Parts of the Nerves, the Brain, Arteries, Fibres and Spinal Marrow, are expoſ'd to be pulled
aſunder,

afunder Diffolv'd, Relax'd and Gangren'd. But, a *Tremor* coming upon this Diſtemper, is one of the beſt Signs of Recovery. For, as in coming before the *Palsy*, it ſignified an obſtruction of the *Orifices* of the Nerves, and beginning of the *Palsy*: So likewise when it ſucceeds or comes after it, it *Præſages* a happy Recovery; eſpecially, when accompanied with *Heat* in the parts affected, for in this Caſe, the Nerves are not totally obſtructed.

PALPITATIONS of the HEART come under the ſame Rules of Conſideration with that of *Tremors*: Tho' this Diſtemper be variously defined, and by ſome diſtinguiſhed from *Tremors*, as others will have it to be nothing elſe. Yet, 'tis as plain as certain, that it muſt be a violent concuſſive Motion of the *Heart*, obvious to our Senſes, and accompanied with an Alteration of the *Pulſe*: Becauſe, the *Pulſe* muſt always agree with the Motions and *Contractions* of the *Heart*. For which Reaſon, *Palpitations* of it cannot be a *Tremor*: Chiefly, becauſe as was formerly obſerved, the *Pulſe* may be ſlow, whiſt the *Contractions* and Motions of the *Heart* are moſt frequent and quick; namely, when the quantity and ſharpneſs of the Humors is ſo great, that they influence the *Fibres* of the *Heart*, before the Blood is derived into its *Auricles*, or has ſufficiently filled them. And therefore this violent *Concuſſion* or *Palpitation* of the *Heart*, ſeems rather to be owing to a *Stimulus* of it, or ſome other

other cauſe accumulating or ſharpening the Spirits, and inflaming the Blood, or that it proceeds from the Cauſes above mentioned, in accounting for an *intermitting Pulse*.

But be it as it will, the *Syſtole* and *Diſtole* of the *Heart* in its *Palpitations*, has ſometimes been ſo much diſordered, and the Concuffion ſo great and violent, that, as *Pernelius* has obſerved (a) it has broke the Ribs, diſjointed the Bones of the Breſt, and dilated the aſcending *Trunk* of the *Aorta*, to the bigneſs of ones Fiſt, whereby the *Pulſe* has been made moſt *Perceptible*, which, has given occaſion, at leaſt to a Conjecture, that *Palpitations* for moſt part if not altogether proceed from ſome Impediment about the *Heart*. Eſpecially, after it has been frequently obſerved in diſſecting the Corps of thoſe who die of this Illneſs, that *Polypus's*, *Anuriſma's*, *Oſſification*, great clots of Blood, *Tartarous Matter*, *Worms*, *Tumors*, *Stones* and ſuch like, have been found in the *Heart* or neighbouring Parts. In which Caſes, the Patients have been affected, not by *Intervals*, but for moſt part *continually*. But, if they are produc'd by *Acrimony* and irritation of a Fluid Matter, Vapor or *Flatus*, as the Antients term'd it, they affect the Patient by *Intervals*, and the *Face* retains its natural Colour.

But, whatever be the Nature of *Palpitations*, whether *Idiopathical* or *Sympathetical*, from whatever Cauſe, or in whatever Diſeaſe *Acute* or *Chronical*, they are always Suſpected and Dangerous, becauſe they of

(a) De par.
morb. cap.
12. lib. 5.

ten terminate in *Syncopes* and fainting Fits, to which, if one is often Subject, without a manifest Cause, at last may be taken off by a sudden Death (a). And, it hath been observed that they are seldom long liv'd who are obnoxious to them; especially, if they happen very early, and in the Flower of ones Age, or caused by a *Tumor*, or Swelling in the Heart. For, in this case, *Palpitations* are incurable: But, those which are commonly a Symptom of *Hysterick Fits*, go off with the cure of that Distemper.

C H A P. XV.

Of Prognosticks taken from Impostumes,
Buboes and Carbuncles.

ONE of the great Effects of the *Circulation* and impetuous Motion of the *Blood*, is to purge it self, and to throw off its *Heterogeneous* and *Foreign* Particles, by the common *Emunctories*, and ways of *Excretion* above-mentioned. But some *Humors* are so *Viscous* and *Tenacious*, that they are not easily separated or attenuated, to be cast out, either by *Urine*, *Sweat*, or other ways; and therefore, are either lodg'd in the *Blood*, or if separated from it, reach no further than the cutaneous *Glands*, where they are form'd into *Abscesses*, *Impostumes*, *Spots*, *Pustles*, &c.

That these *Appearances* have their rise from an obstruction in the *Circulation* and course of the *Humors* in their *Channels*; especially, in the *Capillary Vessels*, is plain and readily conceivable. And that when this happens only in the *Blood*, it occasions *Inflammations*, *Contusions*, *St. Anthony's Fire* or *Blight*, and the like: As an obstruction of the *Lymph*, gives rise to general and particular *Dropfies*, &c. When the morbidick Matter is congealed by degrees, it causeth *Abscesses* and *Critical Tumors*, which are owing
to

to groſs Particles or febrile Matter, which cannot be eaſily attenuated by the *Impetus* of the circulating Blood, but is readily congeſted obſtructed and embarreſſed; whilſt the Blood and *Lymph* continue their courſe.

And, 'tis no leſs plain, that this Obſtruction in the *Circulation* of the *Blood* and *Humors*, is partly occaſion'd by the ſtraightneſs and narrowneſs of the *Tubes* and *Veſſels*; Eſpecially, thoſe that are *Capillary*, thro' which the *Humors* cannot paſs by reaſon of their groſs and viſcous Parts; Or, the Mouths of the *Veſſels* are ſtraightned by *Compreſſion*, which neceſſarily obſtructs the mucilaginous Matter, thickned by Stagnation or ſome powerful acid. Or, Laſtly, this Obſtruction may be owing to a *contraction* of the *Fibres*. Now the Viſcidities of *Humors* being owing to crude and indigeſted *Chyle*, not perfectly attenuated and refined, neither in the *Stomach*, *Arteries*, *Lungs*, or by following Concoctions, are eaſily united, and congeſted; and tho' they may be ſeparated from the greater Channels, by the *impetus* of the *Circulation*, and derived into the *Pores* of Excretion, yet they go no further, but terminate in *Critical Abſceſſes*.

For, when groſs and lent *Humors* Ferment (to retain that known Word) in any place of the Body, they muſt neceſſarily become the more fluxible, and diſpos'd to be ouz'd upon the *Skin*, which, likewise may happen without *Fermentation*; namely, when ſome of the more refined and liquid Parts, if there be any ſuch, are ouz'd and derived into the

Fibres of the *Skin*; or between the *Skin* and *ſcarf-Skin*, whoſe *Texture* is adapted to admit and perſpire the more refined and liquid Matter, whilſt that which is more ſolid, groſs and fix'd are retained and ſtag-nate in it. And, if its quantity is but ſmall and inconfiderable, a *Tumor* is not forthwith raiſed, but inſtead of it, *Spots* and *Exanthe-mata*; eſpecially, if the Morbiſick Matter conſiſts of hot and inflammable Particles. But, when its Parts are ſolid and fix'd, unmix'd with Liquid and thin ones, and comes to be *fermented*, but cannot be perſpired, they muſt be congeſted amongſt the *diſtraſſed* and *diſtended* Fibres, ſpread and extended, and raiſed into *Tumors*, *Spots* or *Puſtles*, variously coloured, according to the *Colour* of the Matter, and Degrees of its *Fermentation*, and *Impetus* of the Blood. Hence are the livid, black, reddiſh, greeniſh *Colours*, and different *Sizes* of Tumors, Spots, Puſtles, &c.

But, here 'tis obſervable, that, if the Morbiſick Matter is quickly *fermented* and diſſolved, 'tis forthwith derived into the Glandules and Pores of the *Skin*, but is not congeſted there, being carried off by *inſenſible Perſpiration*. Thus, the *Small-Pox*, for Example, come to Suppuration, while the *Measles* are never ſuppurated, but diſcuſſed by *Perſpiration*. And, according to the Degrees of Perſpirability of the Matter, either *Tumors*, *Puſtles* or *Spots*; are raiſed upon this or t'other part of the Body: Which *Diſtempers* of the *Skin*, and their *Prognosticks*, have been no leſs diligently obſerved by the Anti-ent

ent Physicians, than thoſe that are *internal*. And, the Sagacious *Hippocrates*, has even given us the Signs of their approach. Thus, ſays he, Thoſe who are a long time afflicted with *Fevers*, are affected with *Tubercles* or *Swellings* in their Joints (a). And thoſe who (a) Aph. a long time, void thin and crude *Urine*, if 44. § 4. they live are troubled with *Absceſſes* below the *Diaphragma*. And, where-ever one is pain'd in recovering out of Sickneſs, will have an *Absceſs* in that place (b). And alſo, thoſe (b) Aph. who in a *Fever*, feel a *wearineſs* in their 32. *ibid.* Joints, eſpecially about the Jaw-bones (c). (c) Aph. And again, thoſe whoſe *Urine* is ſuppreſſed 31. *ibid.* with a *Shivering* and *Horror*, and ſeized with a ſleepy Drouſineſs, will be ſure to be affected with an *Absceſs* in the *Parotides* or Almonds of the Ear.

Now, thoſe *Absceſſes* or *Impoſthumes*, accompanied with other laudable Signs of Concoction, and break out in thoſe Parts which are at the greateſt Diſtance from the *Viſcera*, that come to a ſuppuration and mitigate the Diſeaſe, are ſoft, full, riſe to a Point, and ripen equally; are rediſh, yellowiſh and whitish Coloured, of an indifferent or moderate Largeneſs and Number, nourished and ſupporated in a little time, are juſtly eſteemed to be *Salutary*. For *Absceſſes* accompanied with thoſe Conditions and Circumſtances, and breaking out upon the Almonds of the Ears and Legs, give a Solution to ſeveral Diſtempers; eſpecially, thoſe that are *Pulmonary*. For,

The groſs and viſcous Humors, the pro-
O 4 ductive

ductive cause of the Inflammation, being rendered Fluxible and separated in the most proper place, the Inflammation must necessarily be mitigated and taken off, and the Patient recovers. So it happens when those Humors fall upon the *Legs*, or extream Parts where the Pressure and *Impetus* of the Blood is weakest, and therefore the more disposed to be congested. Thus also in an *Empyema*, the *Pus* and corrupted Matter sometimes pierces the Membranes, and reaches to the very *Skin*, where 'tis congested either in a great quantity, or in smaller Risings and Pustles, here and there over the Body.

By what hath been said of *Abcesses* that are *Salutary*, those which are not such may readily be distinguished. Thus, when they break out unseasonably, as it happens in *Malignant* and *Pestilential Fevers*, and come not to Suppuration; but recoil upon the Blood, and disappear without any apparent Reason, *i. e.* natural Evacuations, or the Administration of Medicines. Or, when they are too dark, red, livid, and blackish coloured, which, even in the *Measles* is a pernicious Sign. Thus likewise, in the just mentioned *Fevers*, when a *Bubo* comes out well at first, with an abatement of the Symptoms, and afterwards Disappears, and instead of it, *Purple Spots*, 'tis a certain Sign of Death. This recoiling of the Morbifick Matter is sometimes occasioned by *artificial* and *forced Sweats*; which, tho' designed to further the Eruption of the *Bubo*, diffuses and dissipates it all over the Body, which should have promoted

moted the Suppuration. Or, the Morbifick Matter being subſtracted, they either ſoon ſtrike in, or at leaſt, never come to a true *Absceſs*. The ſame happens to thoſe in the *Small pox*, when *Sweat* has been violently raiſed; eſpecially at the beginning of that Diſeaſe. So that thoſe *fatal Events*, ſometimes proceed rather from the ill Management of the Cure, than from any venomous Diſpoſition, or *Malignancy*, as 'tis called, of the Diſeaſe.

Of the nature of *Absceſſes* and *Buboes*, and yet more *malign*, are *Carbuncles*; which break out in *Pefſilential Fevers*, being of a ſalt, ſharp, and almoſt a Cauſtick Nature, the Matter of which is precipitated as 'twere, and detach'd from the Blood in the Ebullition and Fervency of the *Fever*, and fixing it ſelf in the Cutaneous Glands; where, by its Corroſive Sharpneſs, it cauſeth a painful *Heat*, *Mortification*, and at laſt a *blackiſh Colour*. In *Malignant Fevers*, they firſt reſemble a ſmall whitish or livid Blister or Pimple, extreemly painful and *Hot*, and in a little time comes to be an *Ulcer*, covered with a *Crust*, like that raiſed upon the Skin by a hot Iron. Sometimes, they begin with this *Crust*, without any Blister, only the *Ulcer* is hid under it, and then diſcovered when the *Crust* is fallen off, eating and corroding the adjacent Parts. The Iſſue and Prognosticks of thoſe *Carbuncles*, is too well known; and likewise that of *Ulcers* in ones *Leg*, when they dry up, and are followed with a Pain in the Breaſt and ſide oppoſite to the affected *Leg*; for, the

the Sign is Mortal. *Hipp. de morb. prop.*

And, generally ſpeaking, the Spots and Eruptions of Humors towards the Skin, the later they appear and nearer to the *Status*, or height of the Diſtemper, ſo much the better: For, then the Diſeaſe tends to a *Criſis* and Concoction. But, in *Malignant Fevers* the ſooner the *Buboes* break out, 'tis the better for the Patient. For, in this caſe, the internal parts are kept clear of the Contagion. And, if the ſwelling of the *Parotides* appear *Symptomatically*, that is, at a time, when the Symptoms are ſtill high, and the Diſeaſe rather inflamed than abated, it always portends Death; But, when it comes *Critically*, 'tis a good Sign, as was juſt now obſerv'd.

The Inflammation happening in the Faces and other Parts of thoſe, taken with *Eryſipelatoſe Fevers*, *Blights* or *St. Anthony's Fire*, has been thought to proceed from the thinner part of the Blood, expelled to the outward Parts, cauſing broad red Spots, by which the *Fever* is taken off. But, more probably, theſe *Phænomena* ſeem to be owing to a ſubtil and volatil Acid, mixed with the volatile Salt of the Blood, by which 'tis coagulated in the Cutaneous Veſſels. For, we may obſerve, that, this Diſtemper commonly happens upon the Nervous and Sanguine Parts. And, 'tis remarkable, that, when its cure is ill managed, the place is ſoon gangreen'd, ſpreads and extends it ſelf upon the adjacent Parts, eſpecially when it happens upon the *Face*.

C H A P. XVI.

Of Crisis's and Critical Days.

EVery Body knows how religiously, *Critical Days* were observed by the Antient Physicians. But, later Ages has wipt off the Dust of antiquity, discover'd its Infirmities, and enriched the Art of *Physick* with closer Observations and Discoveries; by deriding Conjectures, and uncertain *Theories* and Opinions, Torturing *Nature*, and examining her Productions by her own Laws, checking her irregular Motions, and preventing the Extinction of the Vital Heat; especially, when assail'd by the stubborn and unmanageable Distempers and Disorders of *Fevers*, which if not obstructed, run out their Course; some sooner, some later, but always accompanied with an uncertain Event and Issue; which gave Birth to the odd and even *Critical Days*, assigned by the Antients for their *Period*.

It must indeed be granted, That, an animate Body, being a Complexion of Animal and Natural Actions, depending upon certain Principles, subject to the Laws of Nature; when these Principles come thro' Violence or foreign Impressions, or the use of the *Six Non naturals*, to depart from their Natural State; what Motions they make to retrieve their Primitive State will be such as are regulate

gulate by Nature. Thus, in Diseases, especially, those that are *Acute*, there is a certain Standard of Increase and Declension, which comes either to a *Spontaneous* Solution by Chance, or thro' the Favour of Nature, or, terminates in Death. This is the *Crisis* of a Disease, on which the Antient Physicians laid so much stress, and in Feverish Distempers pretended to nominate the Day on which it should happen.

Neither is it to be doubted, that, some Diseases are more constant and regular in their Motions than others; and come to their Period, some in the space of a few days, and others in so many Weeks, &c. For, the Concoction of the Morbifick Matter and Humors, is nothing else than a Change and Alteration in them, to a certain Subtilty and Fineness; that they may be carried by the Force and impulsive Motion of the circulating Blood through the Channells of Excretion; namely, the subcutaneous, Intestinal and Salivary Glands, and those of the Kidneys. But, if the Glutenous and Viscid Humors, cannot be altered and concocted to a Perfection proportional to the Orifices of the excretory Vessels; they must either stagnate in the capillary Vessels, or be thrown by the same Power of the Blood, at least into the Cutaneous Glands; and being retained there, are either form'd into *Abscesses*, or taken off by some *Hemorrhage*; for the accomplishment of which, a certain space of time must be absolutely necessary.

In this reſpect then, it muſt be granted, that there are *Criſiſes* and *Critical Days*, but not fixed to a certain and determinate Number, the Moon's Motion, or that of any other Conſtellation, and thoſe only are *Critical*, in which the Morbiſick Matter is brought to perfect Maturity, ſo to term it. And *that* very day, on which it comes to its laſt Degree of Perfection, to be ſeparated and taken off, is properly *Critical*. For, as the Planets accompliſh their Revolutions, ſome ſooner, and others later according to their *Orbits*. So, the different Humors in a Human Body, before they come to the laſt Degree of Maturation or Concoction, require more or leſs time, according to the Degrees of their Fluxibility; and therefore the *Criſiſes* muſt happen at different times. And, ſuch Humors as can be duly concocted on our third day, may *then* conſtitute a *Criſis*, not that there is any Vertue in a *Ternary* Number; But, that ſuch a ſpace of time is ſpent or is neceſſary, for acquiring a due Maturity and Deſpumation. Beſides, a natural Day with us conſiſting of twenty four Hours and ſuppoſing there be ſome Nations whoſe Days are but Eighteen, the Humors which require Seventy two Hours for their Perfect Maturity, ſhould happen to be *critically* diſcuſſed upon the Fourth, and not upon every third Day. So that in a Parallel Sphere, the time is not to be meaſured by days but by Hours, without which, the myſterious Syſtem of *Ternary*, *Septenary*, and ſuch days, muſt be built upon a ſinking Foundation.

But,

But, tho' the *Grecian Physicians*, by long and cloſe Observations, might have known in what time, or on which day after the firſt Invaſion of a *Fever*, the Morbiſick Matter ſhould be perfectly concocted, changed, altered, and brought to a *Criſis* ; Yet, the uncertainty of their Observations, if applied to the Climate of other Countries, is very Notorious. And, it would be next to a Miracle, if the ſame days which were *Critical* to them, ſhould be ſo with us, not only by reaſon of the *Difference* of *Heat*, but likewise of the Constitution and texture of the Blood. Beſides,

Every one may obſerve, that, the diverſity of Countries, makes no ſmall Difference in the Temper and Manners of the Inhabitants, with reference to Timorousneſs and Courage, Pleaſure and Pain, and other Diſpoſitions of the *Mind*. And, perhaps it may come to paſs, from this diverſity of Climates and ways of living, that, ſome of the *Aphoriſms* and excellent Observations of *Hippocrates* are not always verified, but prove doubtful upon the Experiment. Again, the *Grecian Air* is remarkably purer and finer than ours, and therefore the *Criſiſes* of acute Diſtempers might have been more regular and perfect, whereas our *Air* is often deſil'd with watry and groſs Impurities, which mixing with, and tainting the Humors ; 'tis no wonder, they do not reach a due *Criſis*, and far leſs at the time prefix'd by the *Grecians*.

But, the nicest and moſt diligent obſervers of the *Hippocratical Days*, whether perfectly
Cri-

Critical, Principal and Radical (ſo called) as the *Third, Seventh, Fourteenth, Twentieth,* and ſo on to a Hundred or more, if that will not do, are often miſtaken in their *Prognſticks*, when they come to *Computation*. Some commencing from the firſt Day the Patient was taken Ill ; others when he was confined to his Bed : And, if neither hit right, the Calculation muſt according to the *Grecian Mode*, Commence before or after, and yet after all, find not their Account ; eſpecially, in thoſe called *Imperfectly Critical, Judicatory, Interceding, Medicinal and extraordinary Critical Days*. And, altho' ſeveral Nations have made their peculiar Obſervations concerning the *Criſis's of Fevers* ; yet, the uncertainty always remains ; and it muſt be own'd, that, the laſt and moſt perfect Coction of the Febrile Matter and Excretion of it, cannot be fixed to a limited and certain time. Beſides, a *Criſis* being as we have ſeen, a ſudden change in the Diſeaſe, terminating either in Death or Recovery, entirely depends upon the Method of Cure, which, either haſtens or prolongs it. For, this conſiſting in General Evacuations ſeaſonably procur'd, the Crudities and Humors occaſioning the *Fever*, are ſooner brought to Concoction and thrown out, than naturally they would have been.

Nature, (by which I have all along underſtood the Effects of Matter and Motion according to the Laws and Conſtitution of *Animal Oeconomy*) is indeed the great Phyſician and curer of Diſeaſes ; ſo, that now a
days

days ſeveral Diſtempers are happily taken off by the ſlighteſt Remedies, or, by a meer abſtinence from them. But, in *Acute Diſeaſes*, the Die is caſt for *Life* or *Death*; and in this Caſe, *Nature* is not to be altogether relied on, neither muſt we, as the Advocates for the Doctrinè of *Criſis's* patiently wait for the *Issue* of the Conflict between *Nature* and the *Disease*; the Peccant Humors of ſome *Fevers*, being ſometimes ſo Tenacious, Stubborn, and Viſcid, that, *Art* muſt interpoſe, to promote its Evacuation ſome way or other: their Malignity too often diſpoſing the Blood to a fatal *Coagulation*, and hatching *Death* by being permitted to lodge too long in its Channels. And,

When the Blood is raging and fervent, and expoſed to *Dissolution*, it muſt be controul'd, kept within its Bounds, and its Motions managed in ſpite of the Changes, Conjunctions and Oppoſitions of the Celeſtial Bodies, on which the *Critical* Motions and ſolemn Efforts of *Nature*, and the Rounds of Crudity, Ebullition and Deſpumation were thought to depend. And, in one Word, *Criſis's* of *Diseases* vary in proportion to the various Methods of Cure, the Season of the Year, Climate and Country, way of Living, Conſtitution and Age of the Patients.

C O N.

C O N C L U S I O N.

HAVING thus conſider'd, and in ſome Meaſure accounted for the moſt remarkable and obvious *Appearances* of Diſtempers, and the *Prognosticks* taken from them; It now remains for *Conclusion*, ſhortly to ſubjoin, that, as every Diſeaſe Terminates in Death or Recovery, and one dies, when the Morbifick Matter of his Diſtemper is ſo great, ſtubborn, and obſtinate, that it cannot be overcome or withſtood by the Force and Strength of his Fibres, nor by the briskneſs of his Blood and Spirits. So, on the other hand he is reſtored to his Health when *theſe* are not weakned, diſſolv'd, relax'd, and impoveriſhed in a certain and limited time, that is, when the Morbifick Matter exerts its greateſt Power, and comes with all its Force. For, *then* the Fibrous Parts, and the Blood and Spirits, quickly acquire Strength and recover their *Elaſticity*, the Diſeaſe goes off gradually, and the Patient is reſtored to his former Health. But, forasmuch as the Strength of a Diſeaſe, and the *Time* in which it makes the greateſt ſhock, is beſt known by Experience, if therefore we are ſo happy as to know this *Critical Minute*, and have obſerved, that the Patient has eſcap'd it, then may we with Confidence and Aſſurance *Prognosticate* a happy Recovery.

P

This

This is the Judgment and Compariſon, which, in the *Prognostick Art*, ought to be made between the Strength of the Disease, and that of the Patient. Which, nevertheless upon the Experiment, is found to be attended with Defects and Fallacies, chiefly, by reason of the various Cases, Latent Circumstances of the Disease, and difficulty of commensurating the Strength of the Patient. For, in some Distempers most of the *Signs* of their own Nature are so dark, obscure, and fortuitous with respect to the issue of them, that 'tis no easy Matter to have any Foreknowledge of them. When therefore, we want the *Signs*, which are proper to point at the State of the Sick, 'tis no wonder our *Prognosticks* be fallacious and uncertain.

Thus, some die before they be affected with any apparent Disease, and we are surprized with it before we could *Præſage* the unhappy Event. We are not much affraid of any fatal Consequences from a *Tertian intermitting Fever*, and yet sometimes 'tis changed into that which is *continual*, and becomes Mortal. And, those which appear to be genuine *Tertians* act the same Tragedy in a Fit, and the Patient breaths out his last in the presence of his Physician. Again, in *Malignant Distempers*, we see some escape, and some carried off under the same *Symptoms* and *Appearances* promiscuous to both, as vomiting, Stools, Hemorrhages, Sweats, Spots, &c. chiefly, because those Excretions have not been owing to the same Cause, that is, they have been *Critical* to the one, and *Symptomatical*

matical to the other. And, to diſtinguiſh them is no eaſy Matter; And therefore we muſt be contented with the moſt probable Conjectures, and account for the Cauſes of ſuch *Phænomena* by their Effects.

For, we do not always and ſeaſonably diſcover the Malignancy of the Diſtemper: being often impoſed on by its flattering *Symptoms*, which are often few and gentle; and yet dangerous. Hence it is, that, the unwary Phyſician buoys up his Patient with the Hopes and Affurances of Recovery, until a heavier *Symptom* appears that carries him off. Thus alſo, one that's ſubject to habitual Pains in the Head, is commonly taken with a mild *Continual Fever*, which, not being accompanied with grievous *Symptoms*, may incline the *Phyſician* to hope well of his Patient, not knowing, that the *Fever* is owing to the Old Latent Infirmity and Diſtemper, which, notwithstanding being inflamed and heightened by the Fever, throws him into *Watchings*, a *Delirium* and Mortal *Convulſions*.

Once more, (for *Prognosticks* taken from the *Pulſe* and *Urine*, has already been conſidered with the ſame deſign as here, to render us the more Cautious and Circumſpect in our Judgments concerning them) a Rupture of an *Absceſs* in the Breſt, Meſentery or Liver, inſenſibly ripen'd, is not eaſily preſaged, and the time of its breaking determined; chiefly becauſe neither is the quantity of collected Matter, nor Reſiſtance or *Momentum* of the Solid Parts, to withſtand

the Congeſtion, always the ſame, nor is there always the ſame Degree of *Heat* to bring the matter to Maturity. Beſides, that external Applications, Cold, Coughs, and a thouſand ſuch like Chances, may either procraftinate or haſten the Rupture, the Manner and Event of which is no leſs uncertain, becauſe we know not whether a *Vomica Pulmon.* v. g. ſhall fall into the Cavity of the *Breaſt*, or incline to the *Trachea*, and, if there be one in the Liver or Meſentery; whether it ſhall break upon the Stomach, or Inteſtins, or fall into the Cavity of the *Abdomen*.

Moreover, 'tis obſervable, that the Epidemick Conſtitution of the *Air*, likewise contributes, to render the *Event* of Diſeaſes to be uncertain, and the *Predictions* made concerning them, precarious. Thus, many die of the *Small-Pox* and *Meaſles*, after the nicest Care and Regimen, notwithstanding they ſeem to be gentle and eaſily cured. And, ſome have obſerved, that, one *Time* is more propitious than another to big Bellied Women, many of them being eaſily delivered in *This*, and in the *next* Month with Difficulty. But, however it be, 'tis plain that the Climate and Conſtitution of Places, renders ſome Diſeaſes more or leſs obſtinate and dangerous. Thus, a hot Seaſon is moſt dangerous in the *Small-Pox*, whilſt *Feveriſh* Diſtempers are oftner then taken off, than in a colder one. And, in Watery, Marſhy, and moiſt Places, *Scorbutick* People are more difficulty cured, and oftner die of
grievous

grievous Symptoms, than thoſe who live in a more ſerene and clear Air.

Now, for theſe and many other Reaſons that might be adduc'd, I think 'tis plain, how prudently and cautiously, a Phyſician ought to inſtitute his *Prognosticks*; and how pertinent to this Purpoſe the Sage *Hyppocrates* his Advice is, *Ob hæc ergo non tutum eſt prædicere, priuſquam ad ſtatum perveniat morbus, verum ab hoc tempore, quicquid præter rationem acciderit, dicere oportet* (a). And, *Consulo autem ut quam prudentiſſime agant, tum in reliqua Arte, tum in huiusmodi prædictionibus, illius probe memores, quod ſi cui ſucceſſerit prædictio, is apud ægrum Prudentem in admiratione fuerit: ſi vero quis aberrarit, præterquam quod odio habetur, fortasſe, etiam inſaniffe videbitur* (b). For, ſome Signs (b) *Ibid.* being only probable, and theſe too being often changed and altered by very ſlight and ſometimes hardly obſervable Circumſtances, *Prognosticks* concerning them, are to be made with all poſſible Caution, eſpecially, in acute Diſtempers, which, ſometimes expoſes the Phyſician to no ſmall Reproach and Contempt, when his *Auguries* happen to be False and Precarious.

A Prudent and Wary Phyſician therefore will be moderate and ambiguous in his *Promiſes*, and reſerv'd in his *Prognosticks*, unleſs founded upon certain and infallible Signs. Some there are, whoſe Avarice prompts them to foretel the worſt, pretending thereby, to render the Patient the more obſequious, and to be treated with the greater

greater Care, that the greater Honour and Advantage may redound to them upon *Recovery*, and less Reproach from an *unhappy Event* that was foreseen and presaged. But, I cannot be perswaded, that *Recovery* brings any Honour to the *Physician* who predicted *Death* to his Patient, or told him that his Distemper would continue long, which ends in a short time. For, as neither the Love of Money or Popular Fame, should tempt one to say that which is not true; so, the Sick and Attendants may be disposed to be obsequious, by the severer *Admonitions*, founded upon the Danger that may insue, upon the neglect of *Diet* and *Medicines*. And, on the other Hand, when the *Physician* gives hopes of *Recovery*, and *Death* follows, the Reproach cast upon him, is less regarded, because, Mistakes will happen, or the Disease is changed into another that could not be foreseen, and accompanied with new and more dangerous *Symptoms*. Besides, the change from *Health* to *Death* happens oftener, than from *Death* to *Health* and *Recovery*.

Neither doth a prudent *Physician* give positive Assurances of ones Recovery; For, 'tis God alone that preserves our Life, and prolongs our Days. And, the soundest and strongest of us not being sure of to Morrow, much less is one that's Sick. But, when he foresees inevitable and certain *Death*, his Prudence will incline him to give timely Notice of the Danger. Some indeed, think it more proper to comfort the dying Patient with

with the hopes of *Recovery*, lest the terrible Account of his being past Remedy, should hasten his *Death*. But, every one knows, that this is to be done with all imaginable Caution and Prudence; namely, not to tell him that he must *die*, but that his State and Condition is *Dangerous* and *Doubtful*. For, Monstrous and surprizing Accidents very often happen in Art as well as Nature. Thus, one *Physician* despairing of his Patients *Recovery*, takes his farewell, another is called, and the Sick *Recovers*, so that, *One Sows, and another Reaps*. And, sometimes the Sick is so much startled upon the terrible Sentence of his morose *Physician*, that he is more ready to follow the Advice of the next, and to throw Reproaches upon him who added Affliction of the *Mind* to that of the *Body*, and threw him that was Miserable, into Despair.

'Tis therefore more proper, to communicate, but with a Serene Countenance and Air of Good Hope, the imminent Danger and Hazard to some near Relation or Attendant, who, in a proper way will admonish the Sick of his State and Condition. Nay, it may be more directly insinuated to such Patients who are indowed with a presence of *Mind* and *Spirit*; whereas, the worst is to be always concealed from those that are Young and Timorous. 'Tis true indeed, that, they are but few that are blessed with such a Composure of *Mind*, who are not damped and sunk, upon the account they have of certain and inevitable *Death*. But, some there are, espec-

efpecially, thoſe who have been long afflicted with grievous and painful Diſtempers; and in *Death* promiſe to themſelves an end of all their *Miſeries*. Hence it is, that ſome wiſh for it, and are ſolicitous concerning their State and Condition, that they may the more conveniently diſpoſe of their worldly Concerns; and in ſuch-Caſes to be reſerved or doubtful, ſeems to be unaccountable. But nevertheless, the dying Patient is always to be comforted, the uſe of Remedies continued, and adminiſtered, eſpecially, ſuch as are mildeſt and moſt eaſy, which, upon many Accounts at this time are the ſafeſt.



F I N I S.

